2014/2015 Snowpack Summary Archive

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Agassiz Peak Station (APS) at 11500'
Snowslide Canyon Snotel (SCS) at 9730′

Snowpack Summary for Friday, March 27, 2015.

This will conclude our weekly updates for the 2014/2015 season.

Weather
The Snowslide Canyon Snotel weather-station (9730′ Inner Basin) reports a base of ~91 cm (36″). Arizona Snowbowl is reporting an undisturbed base of ~145 cm (57″) at 10,800′ on a west sheltered aspect.

Over the past week we have locked into a typical spring cycle of nighttime freezing and daytime melting at elevations over 9000 feet. Intermittent breezy conditions on some days (March 23 and 25) out of the north, northeast and northwest, have delayed the thaw, but afternoon temperatures at the Agassiz Peak Station (9500′) have approached or exceeded 40 degrees (F) with a high on Friday March 27th of 49 degrees (F).

High pressure will further build over the coming week with weekend temperatures expected to exceed normals by as much at 10 degrees (F). Spring has sprung and suddenly it feels like summer. Near record temperatures are forecast for Northern Arizona over the weekend.

Summary
Overall: Backcountry snow coverage is rapidly declining, particularly at lower elevation below treeline southerly slopes. However adequate snow remains at higher elevations for good backcountry touring. Corn skiing is the rule. Even northerly slopes above 11,000 have several inches of melt/freeze corn over cold rounded and and well bonded grains.

Other than minor wet loose sluffing, no natural or skier trigger slab avalanche have been reported since the last snowpack summary (3/20/15).

Over the past week and a half the snowpack has gained strength – it has increased density, with good grain to grain, and layer to layer bonding throughout. Even basal facets have bonded together reaching one finger to four finger hardness and showing little to no reactivity in response to stability test (compression and shovel shear tests). Persistent week layers seem to be losing ground to bonding via the equilibrium process and are presumably no longer a worry, at least not where we have had opportunity to observe. The snowpack is approaching equilibrium on all aspects except north, and even on these, less than 3 degree (C) of temperature gradient exists throughout the entire pack, except for the surface region (top 20 cm), no threshold values exist. This means that the snowpack should continue to gradually strengthen and that the chances

of skier/boarder triggered avalanches should diminish to improbable.

Warm daytime air temperatures continue to add heat to the snowpack, but low night time temperatures has refrozen daytime melt-water, thus locking the snowpack together, making it stronger and more predictable.

The current issue is rapid daytime warning and near record high temperatures. Rapid warming will produce rapid melting – quickly transforming strong grains into weak, as bonds disappear and free water accumulates at density breaks withing the snowpack. On many southern facing slopes (where snow remains), crusts have been observed. These may provide such density breaks and as a result, potential wet slide bed surfaces. As we have been harping on for several weeks now, get off of slopes as they become too warm.
On Friday, March 27th, observations near 11,000 ft indicated that it was time to move off steep eastern and southern slopes at ~11am. Wet sloppy slopes are not that fun to ski anyway…

At this stage in the snowpack season, observations indicate the snowpack structure is now quite good with layer densities increasing from top to bottom. The strength of the snowpack is also good, meaning that a skier's weight is unlikely to cause a slab to fracture. In locations where we have had opportunities to evaluate, the probability of fracture propagation is low, meaning that we have not seen reactive results from snow stability tests. Skier triggered avalanches seem unlikely and the probability is that these conditions will continue to prevail for the remainder of the season.

Don't let your guard down as spring progresses. New storms could provide the ingredients for new concerns. New storm snow accumulated on top of a old rock hard frozen snowpack will produce short lived instability – particularly during rapid warming after a new storm.

Without new snow, the formation of new wind slabs seem highly improbable. Wind slabs (now in place) have by and large become non-reactive. Despite the current absence of persistent weak layers, there is still some potential for development of new near surface facets, particularly due to the impressive diurnal temperature swings (difference between high temps and low temps in a 24 hour period) that we get at this time of year. However above freezing days will typically melt surface facets.
A significant cool down in the range of temperatures with highs below freezing followed by a

significant storm could still product avalanches on such a newly formed persistent weak layer. That being said, with the current long-term forecast this scenario seems unlikely.

Backcountry snow conditions remain favorable. We hope you safely enjoy it while it lasts.

Travelers are advised to exercise caution and make slope specific evaluations. As always, please treat this summary with appropriately guarded skepticism, make your own assessments, and contribute to our body of knowledge by reporting your observations.

Thank you for your interest and support of the Kachina Peaks Avalanche Center.

Safe travels, Team KPAC

Snowpack Summary for Friday, March 20, 2015. First day of Spring!

Weather

The Snowslide Canyon Snotel weather-station (9730′ Inner Basin) reports a base of ~107 cm (42″). Arizona Snowbowl is reporting an undisturbed base of ~165 cm (65″) at 10,800′ on a west sheltered aspect.

On Wednesday and Thursday of the past week low pressure brought relatively mild temperatures and light precipitation to the region. The freeze line has hovered at around 10,500-11,000 ft. Three tenths of an inch of new water (as rain) was recorded at Snowslide Canyon Snotel site at at 9730 ft, though 1-2″ of snow accumulated above 10,500′.

This period of cloudy and breezy weather helped conclude an excessively warm period with both day and nighttime temperatures above normal. Temperature records at the Agassiz Peak Station were above freezing between 6:00 am Sunday March 15th and Wednesday the 18th. This added a lot of heat to the snowpack and was probably responsible for some wet natural avalanches in the Inner Basin.
A cool down on Thursday has helped to freeze and lock at least the near surface portion of the snowpack back together.

Ridge top winds have generally been moderate out of the N, NE and NW. Little snow has been available to transport with most of it well bonded via melt-freeze processes or as hard wind slab.

Warm and clearing weather will replace the clouds over the weekend as low pressure exits the region replaced by a building high pressure ridge. Another weak low pressure system may have a similar impact mid week.

Summary

Overall: Backcountry coverage is gradually declining, but the abundance of snow from early March is still providing excellent touring opportunities. However, warming conditions have brought on spring with a vengeance and above normal temperatures are affecting all aspects, but particularly south and west facing slopes at treeline and below with increasing wet slide potential.

Several new avalanches have been reported since the impressive avalanches that occurred during the March 1-2 storm cycle. The cycle of warm temperatures also appears to have caused an avalanche in the skiers right flank of the Telemark path (Silverton Slide) on the north aspect of Fremont Peak. The exact timing on this event is vague. Several other small loose snow avalanches have also been observed.

Wind slabs may still be found on leeward slopes above treeline, but have minimal reactivity. Numerous avalanche prone slopes have been skied recently with no reports of significant instability.

Stability tests reveal a strengthening snowpack, though weak layers linger on northerly aspects at and above treeline. Compression tests revealed dormancy in the reactivity of these weak layers due to localized bonding.

Welcome to spring. Warm air temperatures have added heat to the snowpack, further reducing or eliminating temperature gradients and pushing it toward an isothermal state – where all temperatures within the pack are near freezing. The current issue is poor nighttime re-freezing and lingering free water within the snowpack.

Above freezing nights will keep the snowpack isothermic and unstable. Between March 15 and 18, continuous above freezing temperatures were recorded at 11,500 ft. Three-day periods of mean temperatures above freezing are associated with wet slide cycles. Thursday evening, nighttime minimum temperatures have cooled, locking up the near surface layers, though wet layers of poorly bonded melt-freeze grains have been observed deeper in the snowpack on southern and southwestern aspects.

In some cases, these wet grains are perched above ice crusts where they may create potential wet avalanche instability. The wet layer can become activated as bonds in the layers above melt, and

free water percolates down to this layer, concentrating the "wetting front". Buried wet grains within the snowpack will result in a surprisingly rapid change from supportable corn to dangerous deep slush as percolating melt water reaches this buried layer and it falls apart. Time your tour to avoid sun affected aspects as they become sloppy and unsupportable. Retreat as water saturated snow or deep ski/boot penetration become evident. Also keep in mind that when temperatures do not fall below freezing at night, dangerous conditions can form much earlier the following day.

Backcountry snow coverage continues to be favorable. We hope you safely enjoy it while it lasts.

The Flagstaff ski community recently lost a dear friend, and our condolences go out to family and friends…

Travelers are advised to exercise caution and make slope specific evaluations. As always, please treat this summary with appropriately guarded skepticism, make your own assessments, and contribute to our body of knowledge by reporting your observations.

Thank you for your interest and support of the Kachina Peaks Avalanche Center.

Safe travels, Team KPAC

Snowpack Summary for Saturday, March 14, 2015

Weather

The Snowslide Canyon Snotel weather-station (9730′ Inner Basin) reports a base of ~130 cm (51″). Arizona Snowbowl is reporting an undisturbed base of ~183 cm (72″) at 10,800′ on a west sheltered aspect.

On Thursday, a weak system produced a trace to a few inches of precipitation.

Excellent spring/powder skiing and sunshine have been the norm this past week. Daytime temperatures near 9700 feet have been in the upper 40-50° F, while treeline temperatures made it to the upper 30s.

At treeline, moderate winds blew from the NE on Thursday and Friday, today.

Light winds and daytime temperatures over 40° F at treeline are forecast for the next few days. There is a chance for precipitation beginning mid week – with moisture returning from the south.

Summary

Overall: The major storm cycle of March 1-2 turned winter around and brought impressive amounts of new snow to the high country with 46 inches of snow added to Arizona Snowbowl, and 6″ of snow water equivalent measured by the Inner Basin snotel. No avalanches have been reported since the impressive avalanche that occurred during the March 1-2 storm cycle. That cycle also appears to have caused a fairly significant avalanche in the Telemark path on the north aspect of Fremont Peak.

Windslabs may be still be found on leeward slopes above treeline, but have minimal reactivity. Numerous avalanche prone slopes have been skied recently with no reports of significant instability.

Stability tests reveal a strengthening snow pack, though basal facets and depth hoar, two persistent weak grains, linger on north, northwest and northeast aspects. Snow depths have increased significantly since March 1, effectively eliminating further kinetic metamorphism in the snowpack.

Warm temperatures have initiated a melt/freeze cycle, resulting in excellent corn skiing in the early afternoon depending upon temperatures. However, time your tour to avoid sun affected aspects later in the day, especially if temperatures did not fall below freezing overnight.

There may be some warming issues with daytime temperatures over 40° F forecast for treeline through Tuesday. Watch for warm solar influences producing point releases and rolling snow, indicators of potential wet slide activity and a loss of cohesion in the snow pack. Isothermic slush is the norm below 10,000 on many slopes in the afternoon. Watch for terrain traps and difficult to manage deep slush.

There may also be a possibility of wet-avalanches caused by high elevation rain mid-week… if warm southern moisture moves in.

Backcountry snow coverage is the best it's been in maybe 5 years! We hope you safely enjoy it. Powder snow can still be found above 10,000′ in sheltered north terrain, for excellent touring.

Need some good backcountry safety knowledge? Then consider our Level 1 Avalanche Course is scheduled for March 20-22. Email info@kachinapeaks.org if you are interested in improving your avalanche knowledge.

Travelers are advised to exercise caution in evaluating slope specific conditions, as always – but please treat this summary with appropriately guarded skepticism, make your own assessments, and contribute to our body of knowledge by reporting your observations.

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Safe travels, Team KPAC

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Agassiz Peak Station (APS) at 11500'
Snowslide Canyon Snotel (SCS) at 9730′

Snowpack Summary for Friday March 6, 2015

Weather
The Snowslide Canyon Snotel weather-station (9730′ Inner Basin) reports a base of ~157 cm (62″). Arizona Snowbowl is reporting an undisturbed base of ~196 cm (77″) at 10,800′ on a west sheltered aspect.

The storm has passed and the weather is excellent. Saturday through Monday, expect high pressure, clear skies and gradually warming temperatures with nighttime lows in the upper teens and lower 20s° F and midday highs in the 30s at 10,000 ft. Moderate winds will blow out of the north and northeast 10-20 mph.

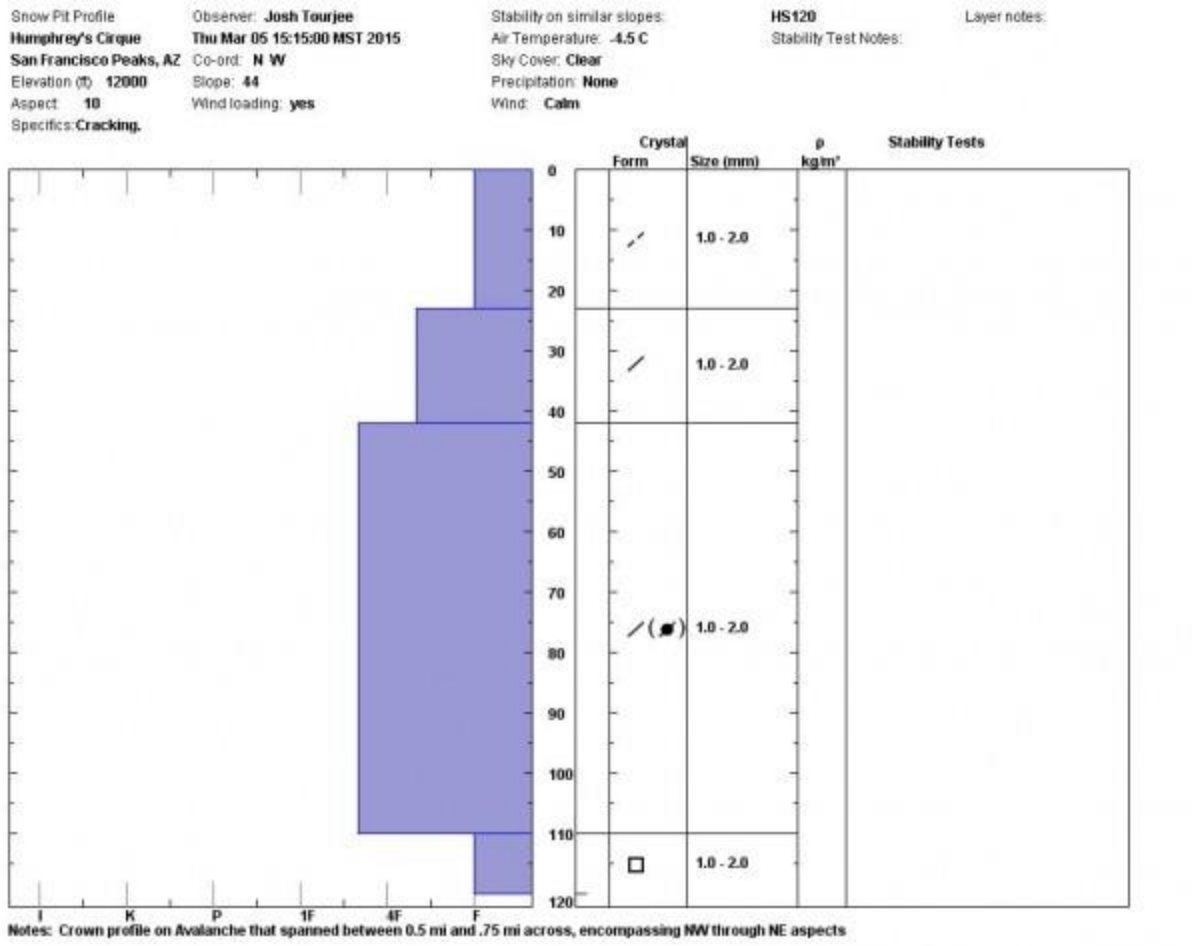
Summary

Overall: The major storm cycle of March 1-2 turned winter around and brought impressive amounts of new snow to the high country with 46 inches of snow added to Arizona Snowbowl, and 6″ of snow water equivalent measured by the Inner Basin snotel. As anticipated, this additional load led to significant natural avalanches in the Inner Basin, with starting zone crown fractures extending from below the lower saddle and propagating around most of North Core Ridge, covering NE through NW aspects.

North Core Ridge Avalanche 20150302:SS-NS-R4-D3.5
Arrows show crown fractures and other information. Click to enlarge.

This avalanche (20150302:SS-NS-R4-D3.5) ran on multiple bed surfaces, with the newly deposited windloaded slopes failing on everything from the new snow/old snow interface down to old basal facets near the ground. Interpreting the details in these occurrences is difficult since the avalanche took place mid storm and the bed surface and crown has been subsequently covered. We estimate that walking the crown fracture line would be a distance of over 1 mile!

On the other side of the ridge (top of skin track in photo), explosive mitigation at the Arizona Snowbowl, on Monday and Tuesday of last week, yielded no significant results, illustrating the variability of snow loading by aspect. The wind during this storm was predominately out of the south and south west, thus loading the snowpack on north and northeast aspects.



Profile from crown fracture. Snowpack appeared to have failed on old basal facets near the ground. Ground surface at this location consist of cinders with some boulders. Click to enlarge.

Although it appears that the new storm snow is bonding well to the snowpack beneath, significant uncertainty remains. Reports of recent sub surface cracking and even occasional whoophing (collapsing) has been recently reported. It should be noted that the process of stabilization through bonding will be prolonged on the colder north and northeast aspects. Storm

snow avalanches remain somewhat of a concern but should stabilize quickly with warming temperatures and relatively light winds in the forecast.

Evidence of some slab failure on old depth hoar near the snowpack base indicates that this persistent weak layer is still lingering. Once again this will be particularly true at treeline and above on northern and northeastern aspects. Tread lightly on these slopes and evaluate thoroughly.

Finally, backcountry snow coverage has greatly improved coverage and conditions, as obstacles are becoming covered.

Please join KPAC for the 5th Annual Mikee Linville Scholarship Fundraiser: This Sunday, March 8, on the Agassiz Deck at Arizona Snowbowl. Live Music, Dancing, Raffle prizes and libations are available. Hope to see you there!

A Level 1 Avalanche Course is scheduled for March 20-22. Email info@kachinapeaks.org if you are interested in improving your avalanche knowledge.

Travelers are advised to exercise caution in evaluating slope specific conditions, as always – but please treat this summary with appropriately guarded skepticism, make your own assessments, and contribute to our body of knowledge by reporting your observations.

Thank you for your interest and support of the Kachina Peaks Avalanche Center.

Safe travels, Team KPAC

Snowpack Summary for Tuesday March 3, 2015

Weather

The Snowslide Canyon Snotel weather-station (9730′ Inner Basin) reports a base of ~178 cm (70″). Arizona Snowbowl is reporting an undisturbed base of ~183 cm (72″) at 10,800′ on a west sheltered aspect.

Saturday through Monday, a significant weather events deposited approximately 25″ of snow at the Snowslide Snotel. This snow had about 6″ inches of equivalent water content. Arizona Snowbowl reported 42″ and fantastic skiing. Winter appears to have finally arrived.

Treeline temperatures between Friday and Sunday morning were between 15 and 20° F, with an unusual warming trend between Sunday afternoon and Monday morning with treeline temperatures hovering near 26°. The rain/snowline rose to near 8000′.

Moderate southwest storm winds have loaded up north and northeastern facing slopes.

Summary

Overall: Although at this posting, no natural or human triggered avalanches had been reported, with the new snow accumulation (42″ at 10,800′), wind (SW-W) and substantial snow water equivalency (SWE of just under 4 inches in 24 hours at Snowslide Snotel) it is hard to imagine nothing moving.

Precipitation amounts met predictions, although a little delayed in arrival from the original forecast. Until new storm snow bonds with wind slab and snow from the previous event (Feb. 23-25), storm snow avalanches will be a big concern (March 1-2). Also particularly troubling was the shift in temperature from cold to warm on Sunday afternoon through Monday morning. This may have created a comparatively low density layer beneath a higher density slab. In other words, a slab over weak layer condition may have formed within the storm cycle. Known as an "upside down storm" this is a common recipe for natural avalanche occurrences and overall instability. This problem should abate fairly quickly, but **for the next 48 hours, anticipate the possibility of storm snow avalanches of a variety of scales, particularly on steep, wind loaded terrain**. Once again, north and northeastern aspects near and above tree line may be prone to deep slab instabilities. The new snow load on old depth hoar could come out of its dormancy and potentially produce large scale avalanches. This is speculative, since we have not had opportunity to thoroughly investigate such conditions directly.

Moderate to strong storm winds from the southwest may have produced soft to hard wind slabs. Wind slabs are the hallmark of the Peaks and it is always worth paying attention and staying off of hollow sounding cohesive hard snow. For the time being, wind slabs will be most prevalent on northeast through northwest aspects near, at, and above treeline.

Finally, backcountry snow coverage is beginning to make it feel like winter has arrived, as obstacles are becoming covered, at least at higher elevations.

Travelers are advised to exercise extreme caution and prudence in evaluating slope specific conditions. Staying out of avalanche terrain of over 35 degree slope angle is advised for the upcoming 24-48 hours – but please treat this summary with appropriately guarded skepticism, make your own assessments, and contribute to our body of knowledge by reporting your observations.

Thank you for your interest and support of the Kachina Peaks Avalanche Center.

Safe travels, Team KPAC

Snowpack Summary for Friday, February 27, 2015

Weather

The Snowslide Canyon Snotel weather-station (9730′ Inner Basin) reports a base of ~109 cm (43″). Arizona Snowbowl is reporting an undisturbed base of ~124 cm (49″) at 10,800′ on a west sheltered aspect.

This past Monday and Tuesday, a significant weather event deposited approximately 20″ of snow at the Snowslide Snotel. This snow had about ~2.7″ of equivalent water content. Arizona Snowbowl reported 32″ and fantastic skiing.

Temperatures since Monday have ranged between 8 and 27° F at 11,500′.

Moderate to strong northerly winds transported and sublimated snow Tuesday through Wednesday this week. Northerly and northwesterly high elevation zones have been scoured, losing much of the new snow.

On Thursday a weak system past through Eastern Arizona, producing strong westerly gusts and some light snow showers near treeline. Prior to this week's storm, very warm temperatures, cool nights, and some strong winds have characterized the month of February.

Friday night through Monday, another significant precipitation event is forecast: moderate to strong southwest winds; 2 to 4+ feet of accumulation near treeline; and a rain/snowline near 7000. Tuesday to Wednesday a colder system moves through with another chance of significant precipitation

Summary

Overall: No natural or human triggered avalanches have been reported since our last snowpack summary (Feb. 22).

Should precipitation amounts meet or exceed current predictions, storm snow avalanches may rise to a level of concern. Instability should be fairly short-lived as persistent weak layer development at the new snow old snow interphase has not been been observed with recent storms. Also wind hardened slabs from the aftermath of last weeks storm seem to be providing strong bridging over any basal depth hoar that has survived. Once again, the exception to this may be on northern and northeastern aspects at, near, and above tree line where we have not had opportunity to thoroughly investigate.

More southwest storm winds are in the forecast, which will result in leeward loading of northeast facing slopes. As we have become accustom to, strong post storm winds from the north and northeast can also be anticipated. These will transport snow back the other direction, loading southern and southwestern aspects. Recent field observations have only revealed small pockets of hollow sounding wind slab, however with more snow and wind transported snow in the forecast, it will now be accumulating on a more widely distributed snow cover, reducing the effectiveness of natural anchors (rocks and dwarf trees) that were uncovered previously. As a result, the scale of unstable wind slabs may increase dramatically,

Despite 24-36 inches on new snow in the past week, thin coverage is still the dominant hazard in the backcountry below 10,000 – especially on south aspects. However the coverage is getting better overall and may become quite good if the current forecast pans out. There is still hope for a winter come back and March Powder Madness.

Travelers are advised to exercise caution and prudence in evaluating slope specific conditions – so please treat this summary with appropriately guarded skepticism, make your own assessments, and contribute to our body of knowledge by reporting your observations.

Thank you for your interest and support of the Kachina Peaks Avalanche Center.

Safe travels, Team KPAC

Snowpack Summary for Sunday, February 22, 2015

Weather

The Snowslide Canyon Snotel weather-station (9730′ Inner Basin) reports a base of ~64 cm (25″). Arizona Snowbowl is reporting an undisturbed base of ~79 cm (31″) at 10,800′ on a west sheltered aspect.

Over the past week, high pressure ridging continued to dominate the region, bringing more above average temperatures, mostly clear skies and periodic breezy conditions. A diurnal pattern of melt/freeze conditions (below freezing nights and above freezing days) has characterized this time period. High temperatures recorded at the Agassiz Peak station (11,500′) in the upper 30s and lower 40s (degrees F) and lows in the 20s. Snowslide Canyon SnoTel site (9730′) recorded a high temperature of 51 degree F on February 19th. Windy conditions prevailed on Tuesday morning February 17 with ridge top gusts in the 50+ mph range. So far, no precipitation has been recorded locally during the month of February.

Looking into next week, a cooling trend has begun, with increasing chances of snowfall continuing into early next week as a large low pressure trough dips southwest from Canada. Current Sunday through Tuesday forecast calls for 1 to 2 feet of snow near treeline and moderate to strong southwesterly winds.

Summary

Overall: No natural or human triggered avalanches have been reported since our last snowpack summary (2/13/15). Sunny skies and warm temperatures have strengthened the remaining snowpack, except on upper elevation shaded terrain and even these have gained significant strength as the snowpack approaches isothermal conditions.

Available snow coverage for back country travel continues to dwindle, with south aspects particularly barren. Shaded terrain above 10,000′ and some wind loaded areas on east and southwest aspects retain sufficient coverage for an enjoyable tour.

Snowpack: Strong winds on Tuesday February 17 (from N and NE), may have formed wind slabs on leeward slopes. However, much of the snow surface is comprised of sun or wind crust, which has left little snow for transport, even by the strongest winds. Although possible, dangerous wind slabs are unlikely, but could exist in isolated pockets on west through southwest aspects. These localized slabs may sound hollow, which is an indicator of potential instability. As mentioned previously, the combination of unseasonably warm daytime temperatures and below freezing nights has had a strengthening and stabilizing effect on the snowpack. Except on colder aspects, the snowpack resembles springtime conditions, despite the calendar reading mid February.

Stability tests show moderate to good strength among the buried wind slabs on west and northwest aspects, though some columns have failed with little provocation on the basal facets and depth hoar. This is a localized phenomena, as areas deeper than a meter with persistent weak layer continuity are typically anchored by the rugged basalt strata of the Peaks. Temperature gradients in the snowpack have subsided below the threshold for kinetic metamorphism (1 degree C/10 cm) with the recent warm temperatures. This trend has helped strengthen weak angular facets and depth hoar.

Should precipitation amounts meet or exceed current predictions, storm snow avalanches may rise to a level of concern. Instabilities will probably be resolved quickly as new snow bonds quickly to old baked surface crusts, however allowing the new snow some time to adhere to the surface below is wise. Accidents occurring at the end of a long drought are all too typical. Poor decisions are commonly made due to the sudden spread of powder fever. Don't fall prey to this "Scarcity Trap". Let the new snow sit and bond, rather than yielding to temptation. Also watch for heavily loaded northeasterly slopes as a potential result of the predicted moderate to strong southwesterly winds.

Marginal to nonexistent snow coverage remains as the dominant hazard in the backcountry below 10,000 – especially on south aspects. Shallowly buried obstacles abound at all elevations. Dedicated backcountry skiers and boarders report skiable and enjoyable conditions for those willing the seek them out.

Travelers are advised to exercise caution and prudence in evaluating slope specific conditions – so please treat this summary with appropriately guarded skepticism, make your own assessments, and contribute to our body of knowledge by reporting your observations.

Thank you for your interest and support of the Kachina Peaks Avalanche Center.

Safe travels, Team KPAC

Snowpack Summary for Friday the 13th of February, 2015

Weather

The Snowslide Canyon Snotel weather-station (9730′ Inner Basin) reports a base of 58 cm (28”). Arizona Snowbowl is reporting an undisturbed base of ~86 cm (34”) at 10,800’ on a west sheltered aspect.

The region continues to be dominated by a high pressure ridge bringing above normal temperatures and clear skies. On February 12th high temperatures recorded at the Agassiz Peak station (11,500’) were 42 degrees F and 48 degree F at Snowslide Canyon SnoTel site (9730’). The exception to warm weather was on Wednesday February 11 when a rapidly moving short wave trough passed to our north and brought cooler, windy conditions, with sustained winds from 25-35 mph and gusts into the 50 mph range.

Looking into the future, expect a continuation of the same, with temperatures from 10-15 degrees above normal and breezy to windy conditions as we continue to be positioned on the margin of passing low pressure disturbances. This will result in strong pre frontal winds, but with little prospect for significant precipitation in the upcoming days.

Summary

Overall: No natural or human triggered avalanches have been reported since our last snowpack summary (2/7/15). Sunny skies and warm temperatures have strengthened the remaining snowpack, except on upper elevation shaded terrain.

Marginal to nonexistent snow coverage remains as the dominant hazard in the backcountry below 10,000, especially on south aspects. Shallowly buried obstacles abound at all elevations. Dedicated backcountry skiers and boarders report skiable and enjoyable conditions for those willing to seek them out.

Strong winds on Wednesday February 11 and Friday the 13th (from N, NE and E), may form dangerous wind slabs on leeward slopes. These slabs are possible on west through southwest aspects and may sound hollow, which is an indicator of potential instability.

Wind moving snow.

Daytime warming could potentially create wet avalanche concerns, however many of the warmer aspects (SW-S-SE) near and below tree line have melted out. Newly formed wind slabs on southern aspects will be more sensitive to skier triggering in the afternoons as they soften with above freezing air temperatures.

Locations of concern are primarily at and above tree line. As always, be aware of rapid warming and the affect on the snowpack. Obvious free water in surface snow, deep ski penetration in the glop, and snow wheels or rollers are obvious signs of this condition.

Time your back country travels to be clear of warmer aspects before they are saturated.

Other observations:
Some persistent slab problems may still linger on cooler, north facing slopes. Due to the poor structure of the snowpack, propagation saw tests (PST) continue to show fracture propagation at a distinct boundary between the cohesive well-bonded snow and basal depth hoar. This issue is highly variable in distribution and seems somewhat dormant right now, but could re-emerge as a hazard with the addition of a significant new snow load. Thankfully, well-developed depth hoar is slowly bonding with the loss of a temperature gradient in the lower snowpack.

Despite a shallow snowpack of approximately 1 meter, touring opportunities still exist at upper elevations. We recommend that you monitor wind slab strength and failure threshold – especially on solar influenced slopes.

Some recrystallized powder may remain in sheltered and shaded areas on North aspects. Thank you for submitting your tour reports on the discussion boards…Good backcountry skiing has been enjoyed in this low-snow year, and is still possible!

Please check our discussion boards for excellent input and field observations. Thank you all for contributing to our community avalanche center.

As a reminder, we have not had ample opportunity to thoroughly investigate all aspects and elevations. Therefore, our confidence in describing widespread conditions throughout the San Francisco Peaks is low.

Travelers are advised to exercise caution and prudence in evaluating slope specific conditions – so please treat this summary with appropriately guarded skepticism, make your own assessments, and contribute to our body of knowledge by reporting your observations.

Thank you for your interest and support of the Kachina Peaks Avalanche Center.

Safe travels, Team KPAC

Saturday, February 07, 2015

Weather

The Snowslide Canyon Snotel weather-station (9730′ Inner Basin) reports a base of ~74 cm (29″). Arizona Snowbowl is reporting an undisturbed base of ~76 cm (30″) at 10800′ on a west sheltered aspect.

Recent Precipitation: On January 10-14, three low-pressure disturbances produced ~30-51 cm (12 – 24″) of moderate density snow (snow water equivalent 1.5 to 2.5″) and light winds at mid to high elevations during the storm cycle. Trace snow amounts were produced from a weak January 27th disturbance.

Approximately 5-25 cm (2-12″) of relatively warm and dense "Baja-snow" was added to the peaks during the last days of January. The rain/snow line fluctuated near 9000′, which resulted in a wide range of snow totals depending upon elevation.

Recent Wind Near Treeline: Moderate to strong NE winds with gusts up to 70 mph blew on January 22 and 23. Moderate SW winds were recorded on January 27th. Light to moderate southerly winds blew during the "baja storm" – January 29th. Four days of sustained moderate to strong NE through NW winds of 10-30+ mph blew as the "baja storm" exited the region. Northerly gusts in the 60+ mph range blew on February 1. Currently we are in a light to moderate southerly flow.

Recent Temperatures: We are currently approaching record high temperatures in Northern Arizona. The Agassiz peak station (11500 ft) remained above freezing (32° F.) for more than 30 hours between Feb 04, 10pm and Feb 6, 5am. Mid-day tree-line temperatures above 40° F. were recorded on Feb. 5th and 6th.

Treeline Forecast:
Continued warm weather and possible record breaking highs. Temperatures of 40° F. or more are anticipated near tree-line through the weekend and Monday. By Tuesday "NEXT WEEK A LOW PRESSURE SYSTEM BRINGS THE RETURN OF PRECIPITATION CHANCES TO THE FORECAST."

Summary

Overall: Backcountry conditions remain marginal and potentially hazardous due to thin coverage or pockets of instability due to warm temperatures and melting snow. Strong Northerly winds on February 1st resulted in localized wind loading and slabs on leeward aspects.

Above normal temperatures and high pressure has initiated a melt freeze 'corn snow' cycle. South aspects which thaw in the afternoon are suspect for wet slide potential. Time your tours to be off of saturated slopes early in the day.

Keep an eye out for wet snow instabilities, such as snow rollers and evidence of free water within the surface snow. Wet avalanches may release and slide on top of melt/freeze crusts where percolation is inhibited. Also, old wind slabs will become more sensitive to skier/boarder triggering as they warm and lose stiffness.

Touring opportunities still exist, but we recommend that you monitor wind slab strength and failure threshold – especially on solar influenced slopes.

Some recrystallized powder may remain in sheltered and shadowed areas on North aspects. Good backcountry skiing has been done in this low-snow year. No avalanches have been reported.

The snowpack is still thin in most places, only deeper than 1 meter in wind loaded areas. Recent stability tests have shown poor snowpack structure, as facets and depth hoar linger at the base of the snowpack on north facing terrain. With most locations being less than a meter in depth, the temperature gradient is ideal for kinetic metamorphism, which results in weak angular grains and poor bonding near the ground. However, strength tests have shown moderate to strong bonding in the upper snow pack with a variety of wind slabs and crusts, depending upon aspect.

Snow roller-balls created by warming temperatures. – photo by Jacob Parchinski

Please check our discussion boards for excellent input and field observations. Thank you all for contributing to our community avalanche center.

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Wednesday, January 28, 2015

Weather

Precipitation History: On New Years Eve, the first significant cold storm of the winter produced 12 to 20″ of low density snow (snow water equivalent 2.54 cm, 1″) accompanied by light to moderate winds. The 'champagne' powder was easily transported by East winds, leaving much of the above treeline terrain scoured.

On January 10-14, three low-pressure disturbances produced ~ 30-51 cm (12 – 24″) of moderate density snow (snow water equivalent 1.5 to 2.5″) and light winds at mid to high elevations during the storm cycle. Trace snow amounts were produced from the weak January 27th disturbance.

Current snow totals from the Snowslide Canyon Snotel weather station (9730′ Inner Basin) reports a base of ~58 cm (23″). Arizona Snowbowl is reporting an undisturbed base of ~71 cm (28″) at 10800′ on a west sheltered aspect.

Recent Wind Near Treeline: Sustained, moderate to strong NE winds of 20-35 mph affected peaks and ridge-tops on January 14 and 15. Moderate to strong NE winds with gusts up to 70 mph blew on January 22 and 23. Moderate SW winds were recorded on January 27th.

Treeline Forecast: The national weather service of Flagstaff predicts a significant weather event this Friday and Saturday. Treeline accumulations may be 30-90cm (1-3′) of snow and possibly over 5cm (2″) of liquid equivalent. Moderate southerly winds are forecast.

Summary

Overall:
The snowpack remains thin and 'early season' conditions continue to dominate. No avalanche activity has been reported to date. The current snowpack is an early season matrix of weak basal facets, crusts and windslabs. The thin snowpack has experienced early season kinetic

metamorphism, creating 2-3mm depth hoar and basal facets, particularly on West and North aspects.

The widespread settling, “whumpfing”, and propagating fractures reported prior to January 19th have subsided. The low density snow from New Years has either been transported by wind, melted on South aspects, or settled to half it’s depth in sheltered locations.

Backcountry **conditions remain marginal and potentially hazardous due to localized lack of snow coverage or pockets of instability due to newly created wind slabs and weak basal facets**. However, the rugged volcanic boulder substrate has thus far served as an effective anchor for the snowpack.

Impressive avalanche paths with powder were skied and ridden approximately January 15th through 20th and no avalanches were reported.

Above Treeline: Powder conditions existed prior to the wind event of January 22-23. The 70+ mph North/Northeast winds scoured North facing terrain and stripped many lower elevation areas. Accordingly, South aspects loaded with this transported snow, creating a variety of supportable to breakable wind slabs and crusts.

Current coverage has dwindled, but touring opportunities still exist by connecting areas of adequate coverage. Monitoring wind slab strength and failure potential is recommended. Some powder remains in sheltered areas.

Below Treeline: Snow coverage is minimal, one meter or less, below 11,000′, especially on sun exposed and wind affected aspects. This thin snowpack is still experiencing kinetic metamorphism, with basal faceting overlain with wind slabs and crusts, depending upon aspect. Snow coverage is rare to non existent below 9000′

Windslabs are widespread at the surface of our current snowpack. Tests have proven these slabs to be locally reactive, failing in the middle of the snowpack on the remaining low density powder snow from January 1st with moderate energy, as well as on the 2-3mm facets and depth hoar at the base. Particularly on North and North West aspects above treeline, columns repeatedly collapsed while cutting.

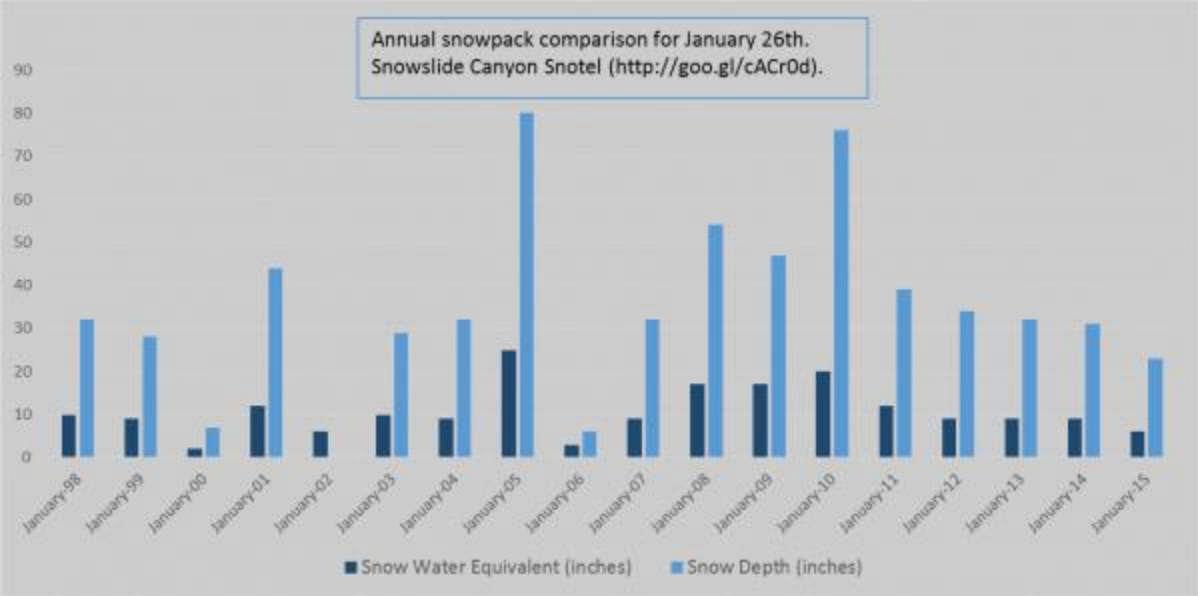
Caution is advised as these these slabs become weighted with the expected storm event Thursday evening, Friday, and Saturday. Also, the wind loaded South aspects have now undergone some melt/freeze hardening, creating an excellent and potentially active bed surface where continuous above treeline coverage exists.

It is worth noting that many of the larger rock anchors are getting covered in the starting zones. More so than the last few years. Any new snow that comes may have less anchors to help stabilize the snowpack. This is not true for all zones, but it seems to be the case on Fremont, based on some observations.

The majority of avalanches are triggered within 24 hours of a storm or wind event! Our community is eager and starved for powder skiing and riding, but moderation is encouraged as this storm is coinciding with the weekend, when many enthusiasts have the opportunity to explore the backcountry…

If this next system produces the predicted amounts of snow accumulation, then some things to think about before going into the backcountry may be:

- The 5 red flags (especially new snow and wind).
- How well is the new snow bonding to the old snow.
- How well is the old snow supporting the new snow – dig down and look for weaknesses between layers and the basal facets.
- And if you do go we recommend you dig.



It's a shallow snowpack this season, but since the Snowslide Canyon Snotel went online, we have recorded 2 or 3 lower snowpacks for January 26th.

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Thursday, January 15, 2015

Weather

Precipitation: On New Years Eve, the first significant cold storm of the winter produced 12 to 20″ of low density snow (snow water equivalent 2.54 cm; 1 inch) accompanied by light to moderate winds.
The 'champagne' powder was easily transported by East winds, leaving much of the above treeline terrain scoured.

On January 10-14, three low-pressure disturbances produced ~ 30-51 cm (12 – 24″) of moderate density snow (snow water equivalent 1.5 to 2.5″) and light winds at mid to high elevations during the storm cycle.

Current snow totals from the Snowslide Canyon Snotel weather station (9730′ Inner Basin) reports a base of ~66 cm (26″). Arizona Snowbowl is reporting an undisturbed base of ~71 cm (28″) at 10800′ on a west sheltered aspect.

Wind affected north facing Hard Core Ridge, January 7, 2015 – by Ken Lane

Wind: On January 7th, peaks and ridge-tops experienced moderate to strong NE through SE winds.

January 10-13 – the low-pressure systems produced light variable winds.

Sustained, moderate to strong NE winds of 20-35 mph affected peaks and ridge-tops on Wednesday, January 14th and Thursday, January 15.

Summary

Overall: The recent storm has doubled the snowpack depth to an average of one meter, allowing realistic backcountry travel for the first time this winter. Continuous snow coverage from 9,000′ and up has ushered in much sought after access to the Peaks. Skiing and riding conditions have improved significantly with the higher density snow.

However, the current snowpack is an early season matrix of unsupportable basal facets and crusts overlain with 50 cm of new snow with 2.5 inches of SWE (snow water equivalent).

Propagating fractures.

Widespread settling, “whumpfing”, and propagating fractures have been reported.

The thin snowpack has experienced early season kinetic metamorphism, creating 2-3mm depth hoar and basal facets, particularly on West and North aspects.

Backcountry **conditions, though greatly improved, remain marginal and potentially hazardous due to localized lack of snow coverage or pockets of instability due to newly created wind slabs and weak basal facets**.

Note that this week introduces the first opportunity to travel into the avalanche starting zones. With no prior compaction, the slopes may be sensitive to the weight of a skier. However, the rugged volcanic boulder substrate has thus far served as an effective anchor for the snowpack.

Robust North and East winds have created localized wind slabs in above treeline terrain. These areas may be sensitive to the weight of a skier, or release naturally with more wind loading.

Up to 60 cm, or 24 inches of new snow, with minimal wind during the storm produced conditions for the first true Powder day of the winter.

With snow water equivalent of 2.5 inches added to the snowpack, the fragility of the underlying early season facets is a concern.

Test Results: West, North and Southwest snow pit observations at @ 11,000′ reveal a sensitive snowpack failing on the boundary of the New Years storm snow and older, faceted snow beneath.

Several study areas collapsed on approach. Three attempts to cut compression test columns failed on the facet layer boundary while isolating the column. Video. An extended column test failed and propagated with a score of ECT 8 of 30.

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Safe travels, Team KPAC

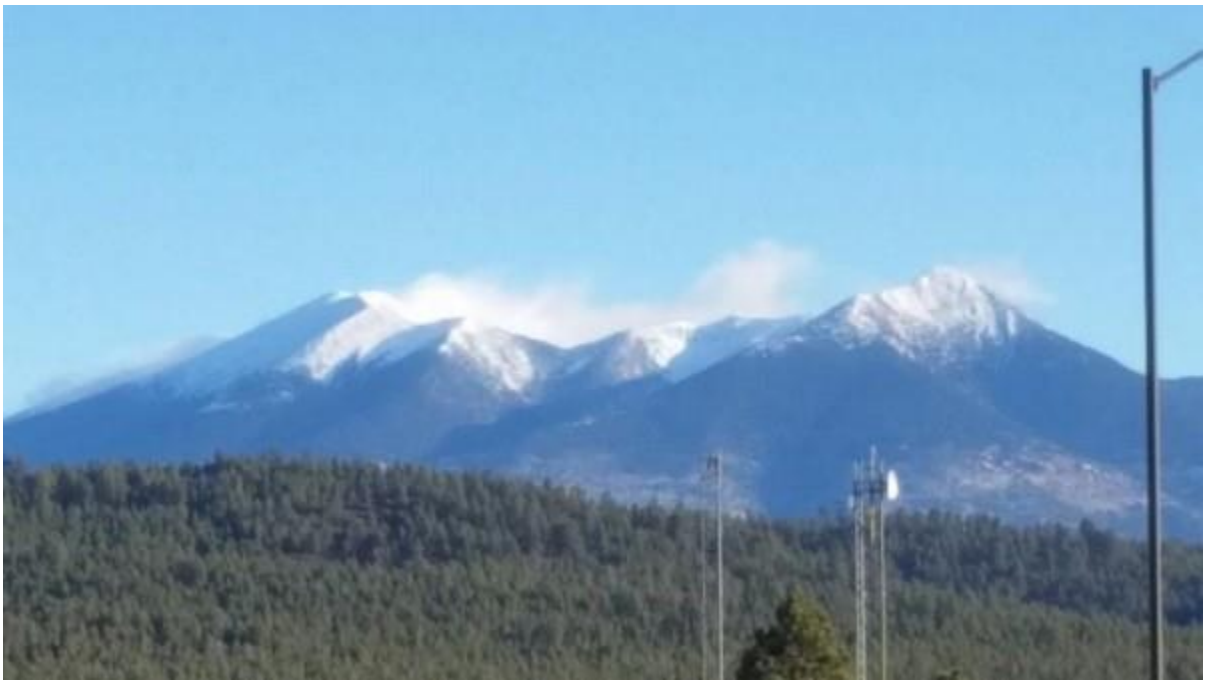
Thursday, January 01, 2015 - HAPPY NEW YEAR!

Welcome to Winter. The first significant snow event of the season has ushered in the New Year and this inaugural Kachina Peaks Avalanche Center Snow Summary for the 2014-2015 Winter.

Weather

Precipitation:
During the month of December, normal to above normal amounts of precipitation fell in Northern Arizona. However, much of that was in the form of rainfall in early December up to 11,000'. Accordingly, actual snow totals for the season have varied significantly based on elevation. Skiable conditions in the back country have been elusive thus far. Prior to the New Year storm, there was very little snow below 8500'. Light intermittent snow showers fell on the Peaks between December 25th and 27th. **Backcountry snow coverage remained thin and variably distributed making backcountry travel challenging**.
On New Years Eve, the first significant cold storm of the winter descended upon us, producing between 12 and 24 inches of low density snow (snow water equivalent 2.54 cm; 1 inch) accompanied by light to moderate winds.
Current snow totals from the Snowslide Canyon Snotel weather station (9730' Inner Basin) reports a base of ~56 cm (22″). Arizona Snowbowl is reporting an undisturbed base of ~66 cm (26?) at 10,800′ on a west sheltered aspect.

Wind:
On December 24th, Northerly winds (~50-80 mph) transported the existing powder snow high on the peaks, stripping windward, north facing starting zones to near bare ground. Due to the wind velocities, much of the snow was lost to the atmosphere through sublimation. Moderate winds during the most recent storm cycle have redistributed some snow and created loading on leeward slopes. Increasing winds have the potential for easily transporting the new storm snow.



Strong wind on the San Francisco Peaks today. The highest gust reported as of late this morning was 82 mph. Notice in the image below the formation of clouds surrounding the peaks. This is a direct result of sublimating/evaporating snow and upslope flow caused by the strong wind. Otherwise, the atmosphere is much too dry to form clouds. Dec. 23, 2014, US National Weather Service – Flagstaff

Summary
Backcountry skiing conditions are marginal and potentially hazardous due to lack of snow coverage. Significant skier triggered avalanches are unlikely.

Winter has had a slow start here in Northern Arizona, but this may be changing with the cold New Year's storm. Up to 24″ inches of very low density snow has accumulated at higher elevations. Observations in the Inner Basin recorded prior to the most recent storm cycle revealed a 5-10 cm layer of large (5-10mm) well formed stellar crystals with numerous long slender needles, overlaying harder high density snow, probably resulting from the Pre-Christmas wind event. Although these observations were confined to isolated locations on northerly aspects near 10,000 feet, such conditions could produce small localized avalanches if overlaid by several feet of new snow.

Stellar Crystals near 10000 feet. December 27, 2014. (click to enlarge)

Whether or not these conditions exist on steeper, higher elevation slopes would be speculation. However, if so, skier triggered avalanches would be likely until sufficient time has passed to allow bonding with the layers below.

As a reminder, we have not had ample opportunity to thoroughly investigate all aspects and elevations. This is particularly true now as poor coverage has limited access to higher elevations on the Peaks.

Therefore, our confidence in describing widespread conditions throughout the San Francisco Peaks is low.

Keep in mind, anytime more than 2 feet of snow falls in a 48 hour period, the underlaying snowpack is stressed and bonding with the snow beneath requires time.

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Thank you for your interest and support of the Kachina Peaks Avalanche Center. We welcome your input and observations throughout the winter.
Safe travels and Happy New Year.