exposure time is limited to maximum of about 2.5 seconds.
While HiRISE will observe +/-60 hours with respect to closest approach(CA), the prime nucleus data will be obtained +/-2 hours wrt CA. It is expected that the nucleus and inner coma will be detected in both the red and blue-green channels.
Preliminary results of the HiRISE observations will be presented.

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110.05 – Hubble Space Telescope View of Comet C/2013 A1

Comet C/2013 A1 (Siding Spring) is a dynamically new comet whose physical and chemical status should be the least evolved since the formation of cometesimals during the planetary system formation processes. Its close encounter with Mars on October 19, 2014 at a distance of 138,000 km allows for imaging its nucleus and inner coma by MRO/HiRISE at 140 m/pix resolution. Such an encounter offers us the opportunity to do cometary flyby science for a dynamically new comet for the first time ever. We observed C/Siding Spring using Hubble Space Telescope (HST) from October 2013 to March 2014 when the comet was at 4.58, 3.77, and 3.28 AU from the Sun, and will observe it again during its close encounter with Mars at 1.40 AU heliocentric distance. One of the objectives of these observations is to study the long-term evolution of the dust coma of C/Siding Spring, including its dust features and color, in order to provide context for better understanding the evolution of the activity of a dynamically new comet from the “flyby” observations during its Mars encounter. Our early observations show that C/Siding Spring’s coma contains two dust features, and the spatial distribution and temporal evolution of the color of its coma are consistent with the existence of icy grains. New observations to be performed during the encounter will reveal the evolution of the dust features and color from previously observed, as well as any newly developed features. We will report our results from the HST observations, including the preliminary results from the encounter observations.

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110.06 – NASA/IRTF, Chandra, and HST Observations of Comet C/2013 A1 (Siding Spring)’s Encounter with Mars

On Oct 19th of this year, circa 18:30 UT, dynamically new Oort Cloud comet C/2013 A1 (Siding Spring) will fly within 138,000 km of the planet Mars. This distance is so small (~1/3 the mean Earth-Moon distance, and 16 times closer than any comet has approached the Earth in the modern spaceflight era) that Mars will be moving through the comet's outer atmosphere, or coma, carrying Mars, and its orbiting and ground based roving spacecraft fleet with it. In this way the Mars fleet will be participating in a close comet flyby, and in addition to supporting the encounter by leading NASA's CIOC campaign, our group is also obtaining remote sensing observations of the comet in September - October 2014. We have received 5 partial days of observing time in late September at the NASA/IRTF facility, when the comet is brightest from the Earth, to use the SPeX NIR spectrometer at 2-5 um to characterize the comet's pre-encounter gas and dust production contemporaneously with the BOPPS balloon mission. During the encounter, we will use 54 ksec of Chandra time and 10 orbits of HST time to monitor the comet's nucleus, dust, and the comet-Mars gas/ion interaction and x-ray emission. Both the comet and Mars are known x-ray emitters, and Mars' flight through the comet's outer coma downstream wrt the solar wind suggests there will be an important transfer of energy, neutrals, and ions into the Martian exosphere, likely enhancing the Martian x-ray signal.

In this paper we report on our preliminary results from our IRTF, Chandra, and HST observations and put them in context with other measurements taken during the 2014 Comet Siding Spring Observing Campaign.

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110.07 – TRAPPIST monitoring of comet C/2013 A1 (Siding Spring)

C/2013 A1 (Siding Spring) is a long period comet discovered by Robert H McNaught at Siding Spring Observatory in

Australia on January 3, 2013 at 7.2 au from the Sun. This comet will make a close encounter with Mars on October 19, 2014. At this occasion the comet will be extensively observed both from Earth and from several orbiters around Mars. On September 20, 2013 when the comet was around 5 au from the Sun, we started a monitoring with the TRAPPIST robotic telescope installed at La Silla observatory [1]. A set of narrowband cometary filters designed by the NASA for the Hale-Bopp Observing Campaign [2] is permanently mounted on the telescope along with classic Johnson-Cousins B, V, Rc, and Ic filters.
We observed the comet continuously at least once a week from September 20, 2013 to April 6, 2014 with broad band filters. We then recovered the comet on May 20. At this time we could detect the gas and started the observations with narrow band filters until early November, covering the close approach to Mars and the perihelion passage.
We present here our first results about comet Siding Springs. From the images in the broad band filters and in the dust continuum filters we derived A(?)f? values [3] and studied the evolution of the comet activity with the heliocentric distance from September 20, 2013 to early November 2014.
We could also detect gas since May 20, 2014. We thus derived gas production rates using a Haser model [4]. We present the evolution of gas production rates and gas production rates ratios with the heliocentric distance.
Finally, we discuss the dust and gas coma morphology.

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110.08 – A Smorgasbord of Comet Narrowband Photometry: Results from 209P/LINEAR, PanSTARRS (2012 K1), Jacques (2014 E2), and Siding Spring (2013 A1)

We report on narrowband filter observations of four comets obtained or scheduled to be obtained from Lowell Observatory in 2014. Comet 209P/LINEAR is a recently discovered Jupiter-family object -- implying it either has a very small size or has very low activity -- and our measurements reveal the latter option to be the case, with a water production rate near perihelion of only 2.5×10^{25} molecules/s, the smallest value we've detected. The associated active area is less than 0.01 km^2 and, combined with a nucleus size based on radar measurements, the active fraction is only about 0.03%. Similar to several other heavily evolved Jupiter-family comets, LINEAR has a "typical" chemical composition, thus providing further evidence that carbon-chain depletion seen in other comets is not a consequence of evolution.
Comet PanSTARRS (2012 K1) was observed four consecutive months prior to its conjunction with the Sun, with a final water production rate at 1.9 AU of 9×10^{28} molecules/s, along with a relatively low dust-to-gas ratio. Comet Jacques (2014 E2) was observed shortly after discovery in March and again in April, revealing a very low dust-to-gas ratio; further observations are scheduled for late August and September.
Finally, while we have no data in-hand, measurements of Comet Siding-Spring (2013 A1) are planned for mid-October, including the nights surrounding its encounter with Mars. A summary of results from these campaigns will be presented.
This research is supported by NASA's Planetary Astronomy Program.

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110.09 – The Water Production Rate of Recent Comets (2013-2014) by SOHO/SWAN: 2P/Encke (2013), C/2013 R1 (Lovejoy), and C/2013 A1 (Siding Spring)

The all-sky hydrogen Lyman-alpha camera, SWAN (Solar Wind Anisotropies), on the SOlar and Heliospheric Observatory (SOHO) satellite makes observations of the hydrogen comae of comets. Most water vapor produced by the comet is ultimately photodissociated into two H atoms and one O atom producing a huge atomic hydrogen coma that is routinely observed in the daily full-sky SWAN images in comets of sufficient brightness. Water production rates are calculated using our time-resolved model (Mäkinen & Combi, 2005, Icarus 177, 217), typically yielding about 1 observation every 2 days on the average. Here we describe the progress in analysis of observations of comets observed during 2013-2014 and those selected from the archive for analysis. These include comets 2P/Encke (2013), 45P/Honda Mrkos-Pajdusakova (2011), C/2013 R1 (Lovejoy), as well as C/2013 A1 (Siding Spring), for which results are expected. A status report on the entire SOHO/SWAN archive of water production rates in comets will be given. SOHO is an international cooperative mission between ESA and NASA. Support from grants NNX11AH50G from the NASA Planetary Astronomy Program and NNX13AQ66G from the NASA Planetary Mission Data Analysis Program are gratefully acknowledged.

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