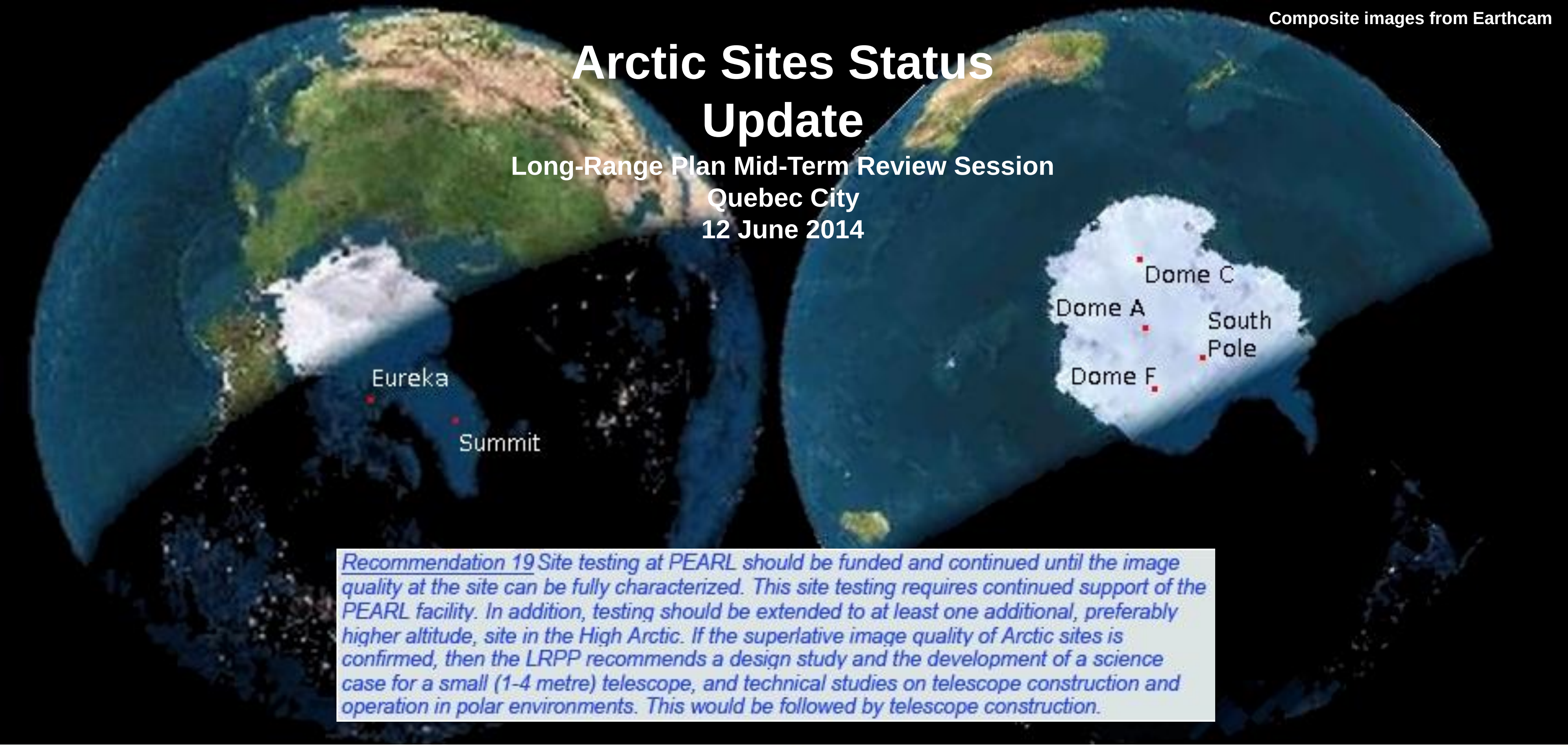
Composite images from Earthcam

Arctic Sites Status Update

Long-Range Plan Mid-Term Review Session
Quebec City
12 June 2014



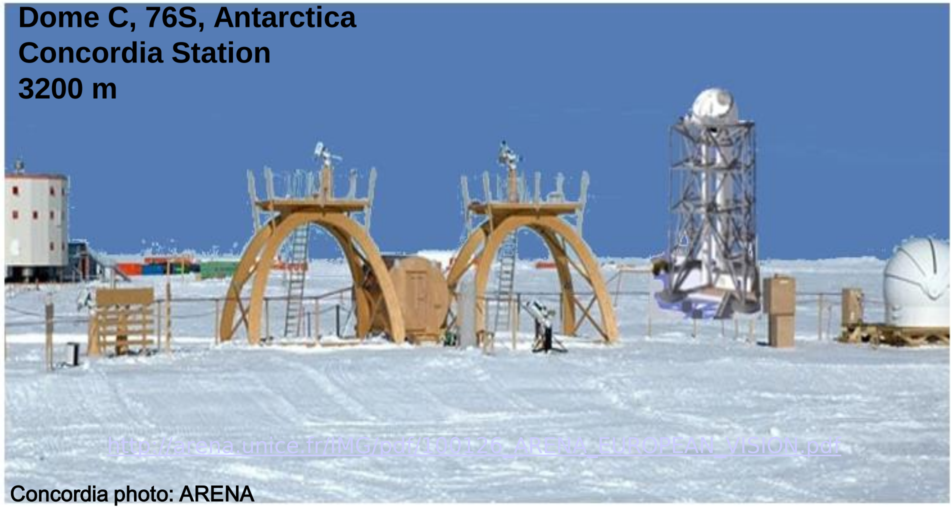
Recommendation 19 Site testing at PEARL should be funded and continued until the image quality at the site can be fully characterized. This site testing requires continued support of the PEARL facility. In addition, testing should be extended to at least one additional, preferably higher altitude, site in the High Arctic. If the superlative image quality of Arctic sites is confirmed, then the LRPP recommends a design study and the development of a science case for a small (1-4 metre) telescope, and technical studies on telescope construction and operation in polar environments. This would be followed by telescope construction.

Eureka, 80N, Ellesmere Island, Canada
Polar Environment Atmospheric Research Laboratory (PEARL)
600 m

ftp://ftp.hia.nrc.ca/pub/users/es/Arctic/Papers/Arctic_Observatory_Transition_Plan_1.1.pdf

PEARL photo: CANDAC

Dome C, 76S, Antarctica
Concordia Station
3200 m



http://arena.unice.fr/IMG/pdf/100126_ARENA_EUROPEAN_VISION.pdf

Concordia photo: ARENA

Clarity

Usable sky (V<2 mag): 86%
Clear sky (V<0.5 mag): 68%
Photometric sky: 48%
[MK: 80%, 70%, 50%][1]
Steinbring et al., 2012, PASP, 124, 185

Opacity

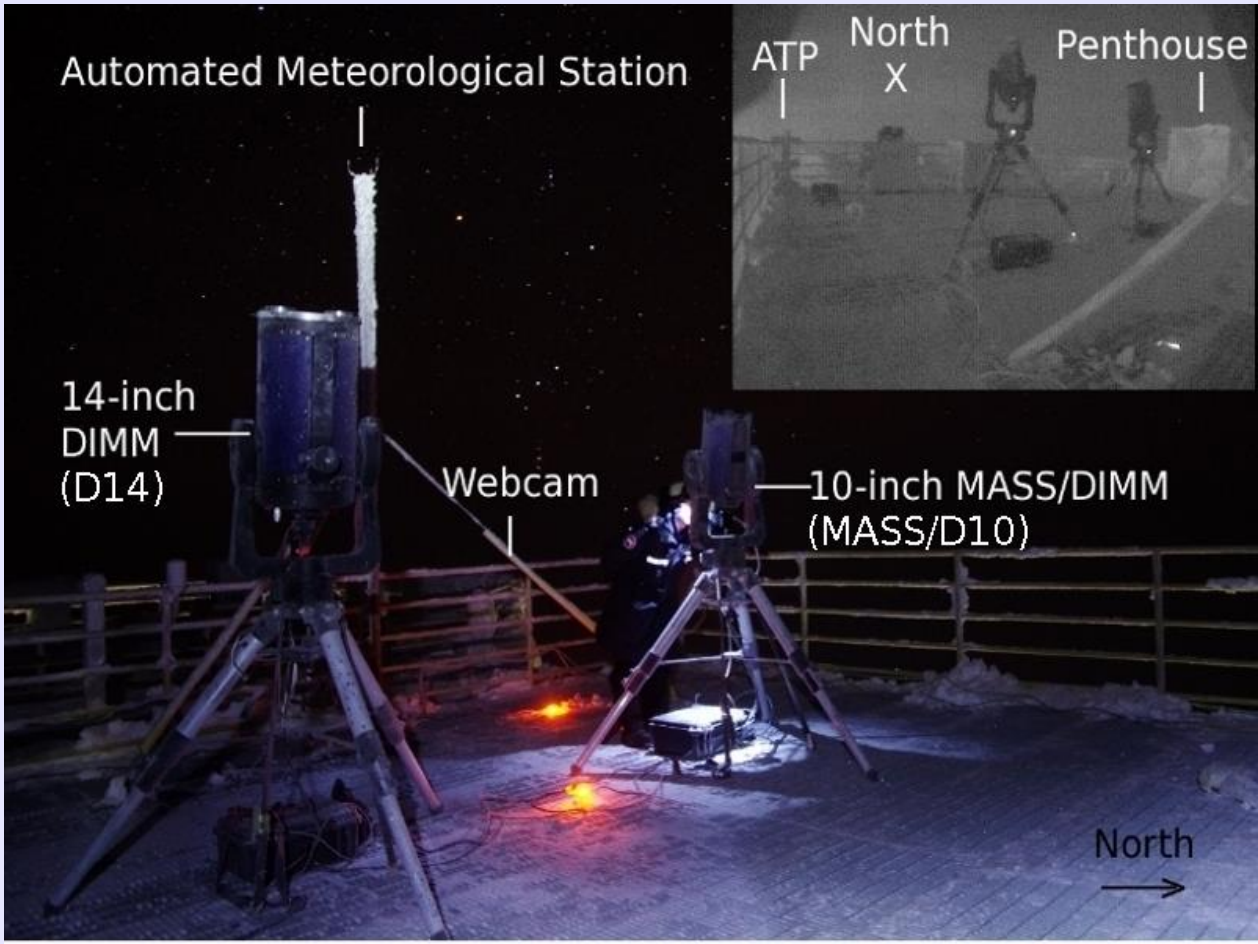
Median tau (225 GHz): 0.14
Modal tau (225 GHz): 0.09
[ALMA: 0.08, South Pole: 0.06][2]
Matsushita et al., 2013, IAU, 124, 185, 204
Asada et al., 2012, SPIE, 8444, 1

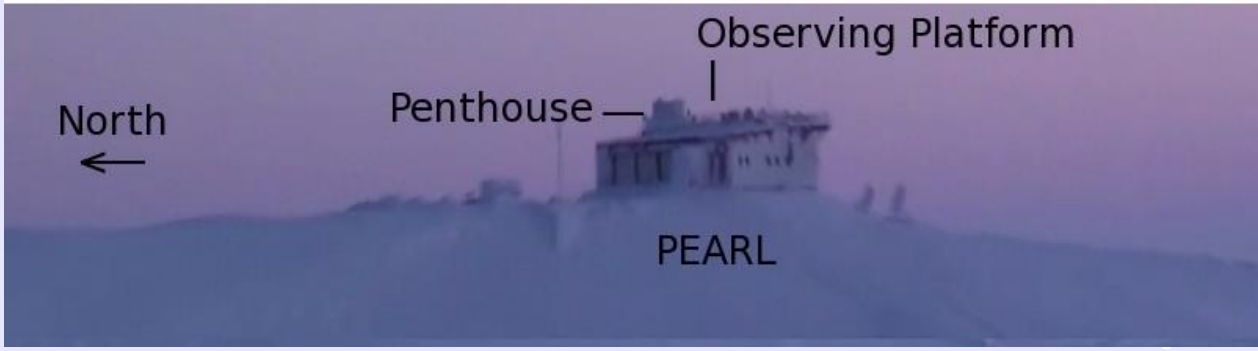
Brightness

Grey (V): 19.7 mag/sq-arcsec
[MK: 19.5, Dome C: 19.8][3]
Dark (V): 20.7 mag/sq-arcsec
Infrared (J): 15.8 mag/sq-arcsec
Steinbring et al., 2012, PASP, 124, 185
Sivanandam et al., 2012, SPIE, 8446, 43

Seeing

Median total (V): 0.76 arcsec
Median free (V): 0.50 arcsec
[MK: 0.75, 0.33; CTIO: 0.79, 0.50]
Modal free (V): 0.23 arcsec
Steinbring et al., 2013, PASP, 125, 866
Hickson et al., 2013, MNRAS, 433, 307
Hickson et al., 2010, SPIE, 7733, 53





1: Gemini usable, clear, and photometric fractions, 2: Yearly means, 3: Median of 12 degree twilight

SLOpe Detection And Ranging (SLODAR)

Maire et al., 2014, SPIE, in prep.

Autonomous Arctic Telescope System (Ukaliq)

Steinbring et al., 2014, IoPCS, in prep.

Arctic Wide-field Cameras (AWCams)

Law et al., 2014, SPIE, in prep.
Law et al., 2013, AJ, 145, 58
Law et al., 2012, SPIE, 8444, 5

High-Arctic Stratospheric Balloon Observatory Ground Support (?)

Photo: Jerome Maire