Example AirMSPI observations near the principal plane

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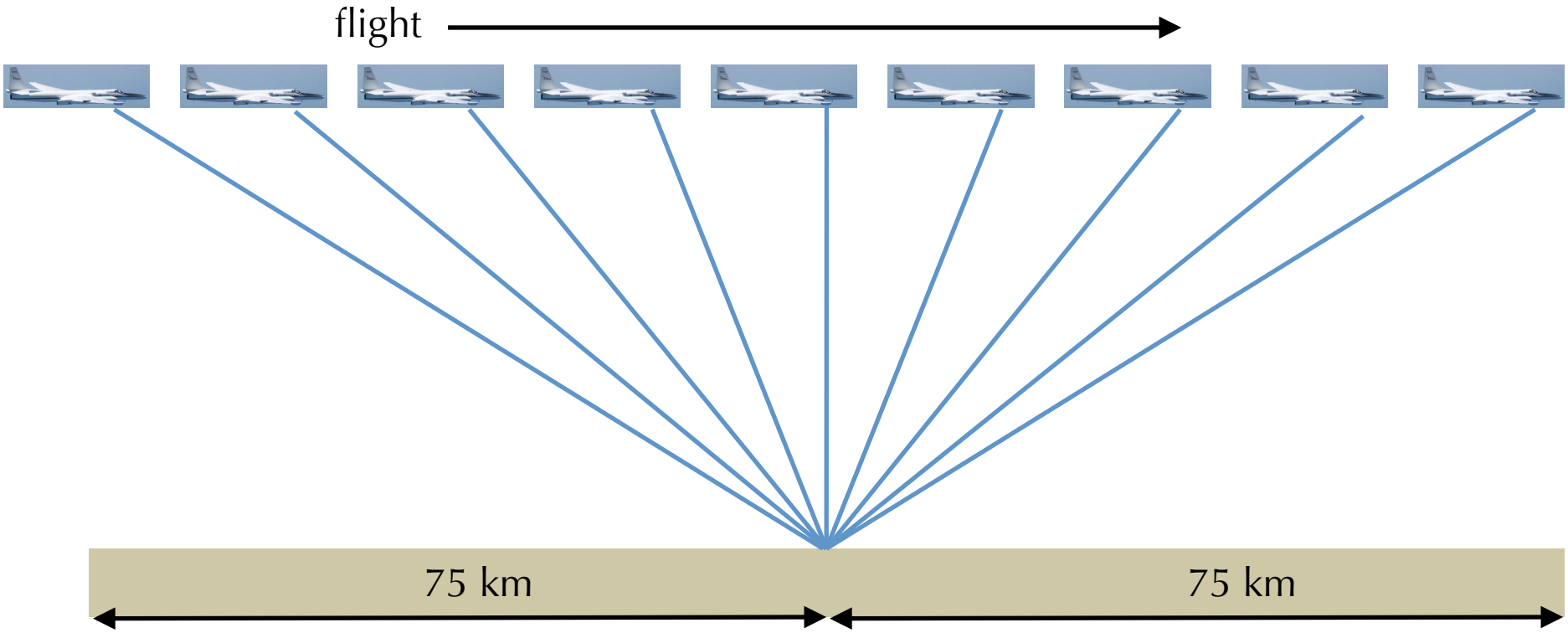
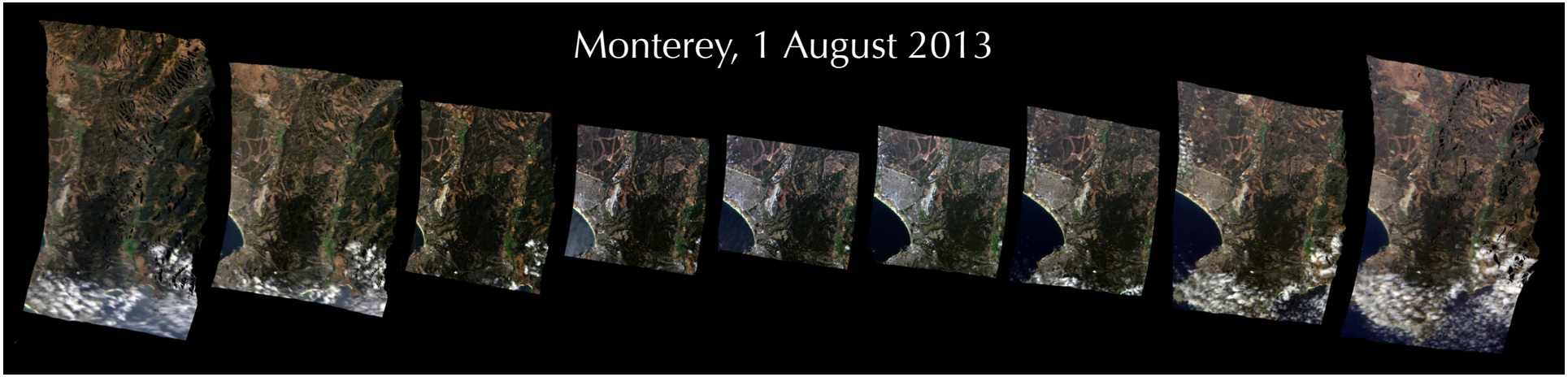
Thanks to our early SEAC^{4}RS AirMSPI crew:
Brian Rheingans, Sven Geier, Sebastian Val,
Michael Garay, Olga Kalashnikova,
Michael Tosca, Michael Bull, Veljko Jovanovic,
Karlton Crabtree, Ralph Kahn

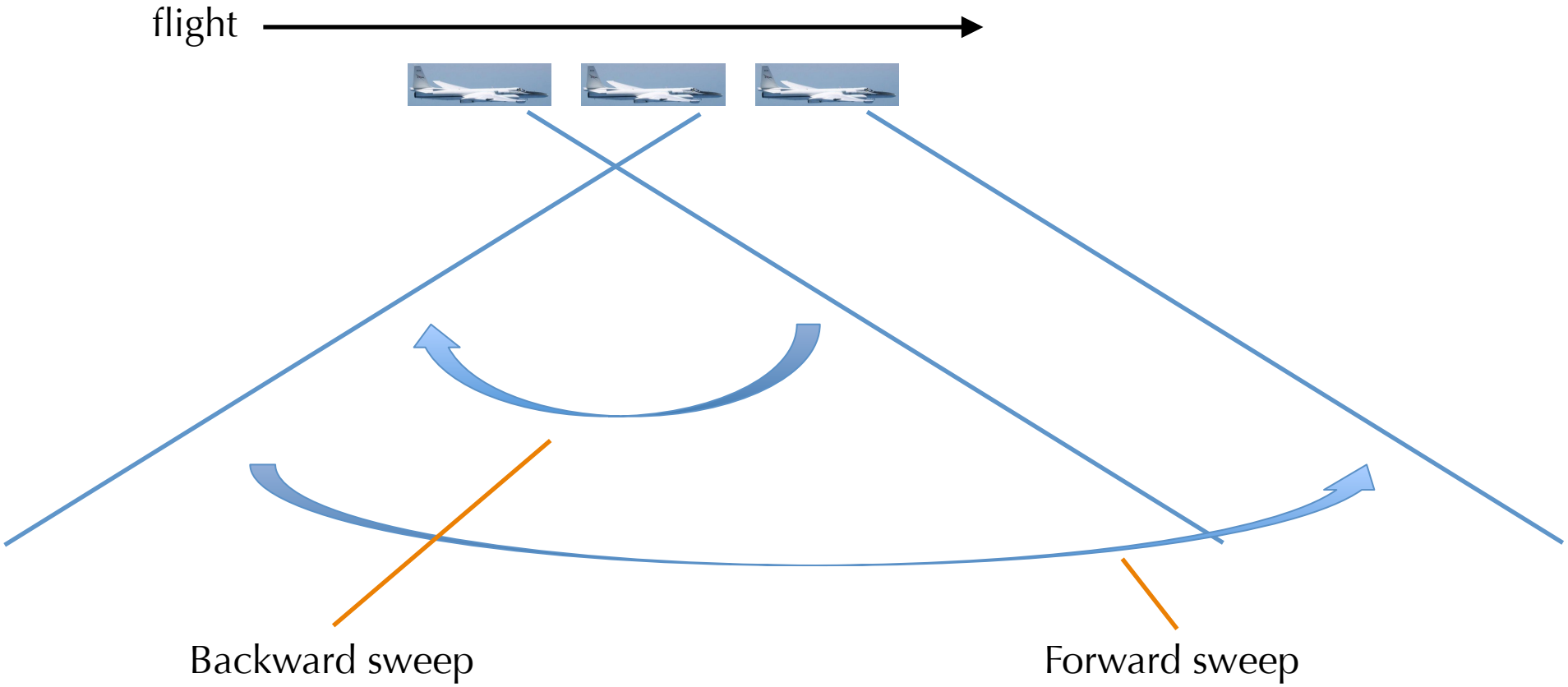
…and the ER-2 pilots and crew
and flight planners

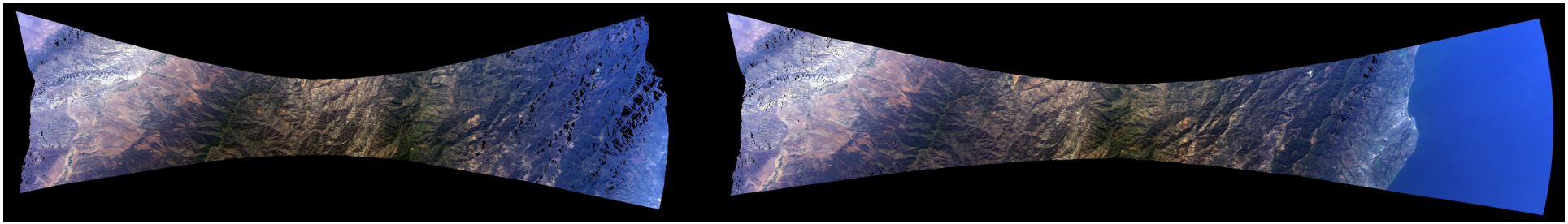
AirMSPI step and stare



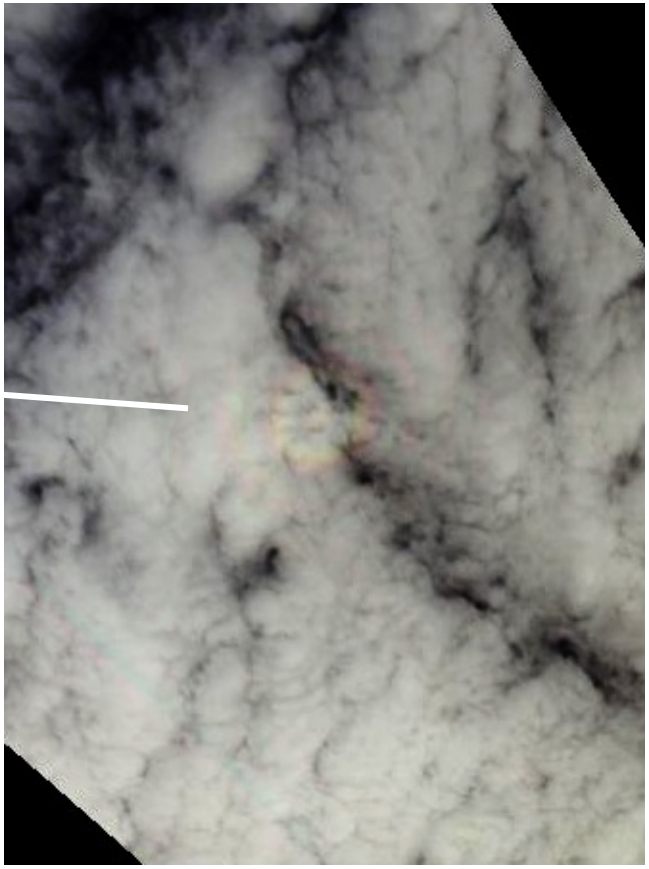


AirMSPI sweeps

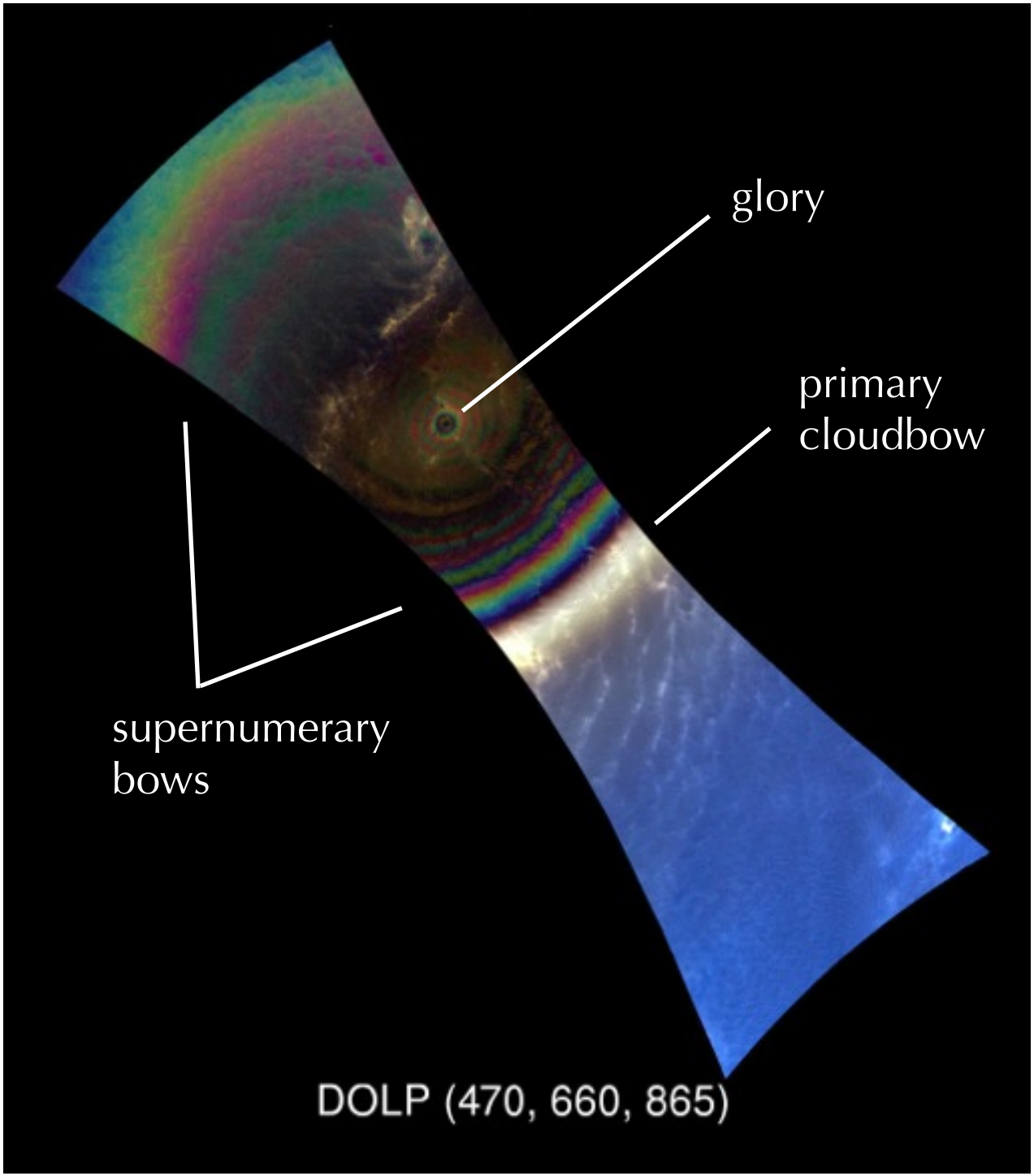




Santa Barbara, 1 August 2013



glory at 180º scattering angle



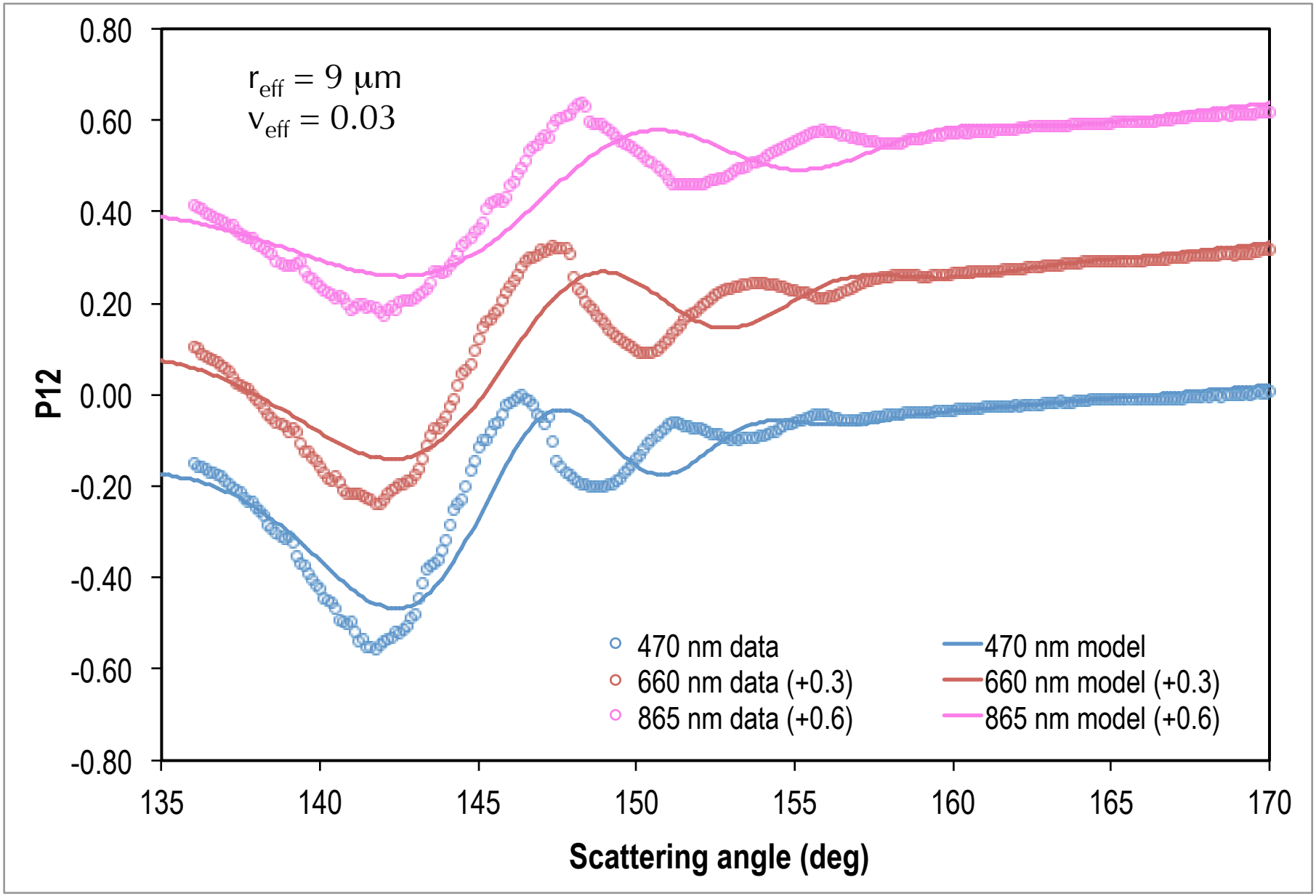
The cloudbow, glory, and supernumeraries indicate spherical drops

The supernumerary bows are interference fringes

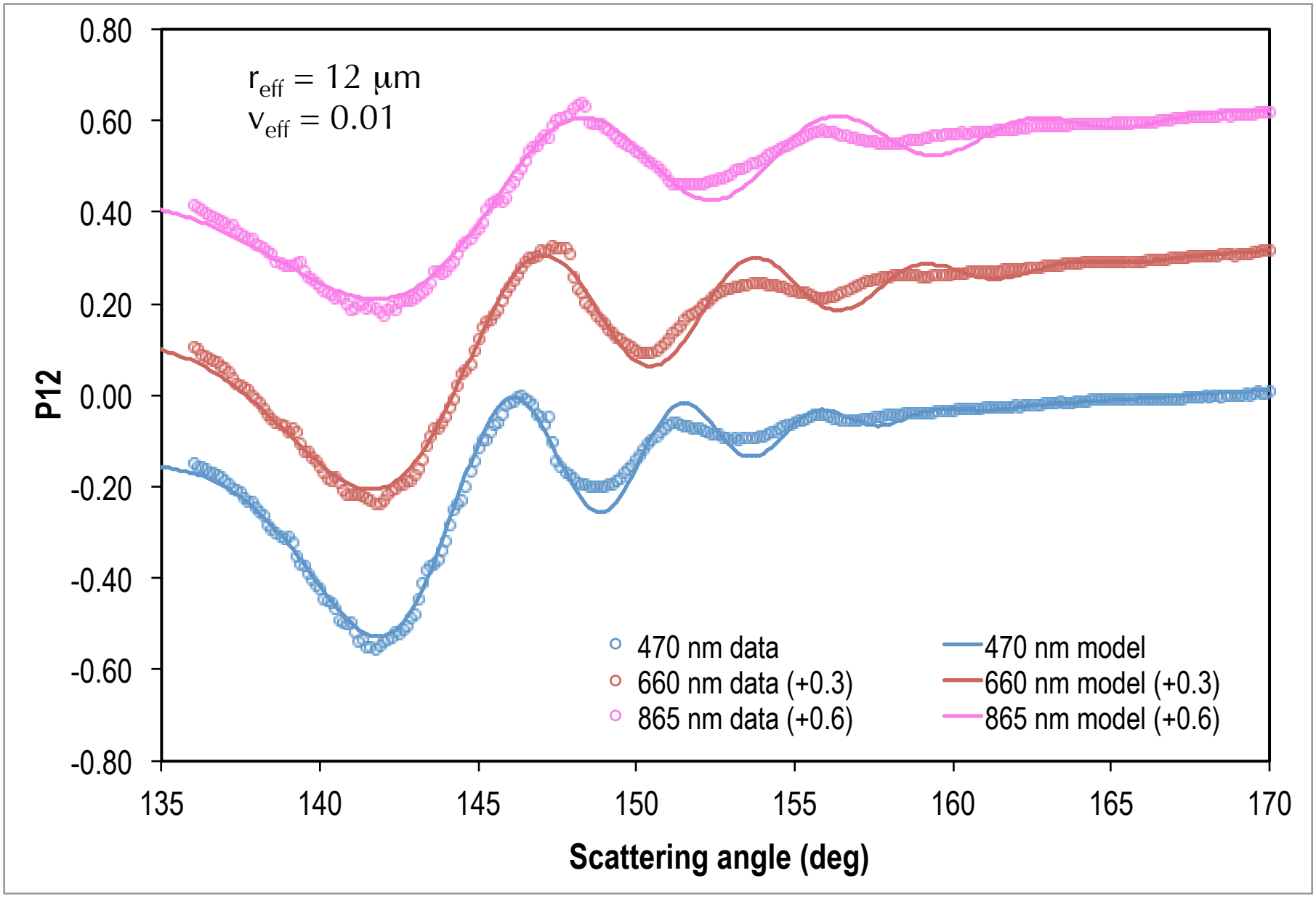
Their angular positions and relative magnitudes are governed by the particle size distribution at the cloud top

This provides a lower boundary constraint on above-cloud aerosol

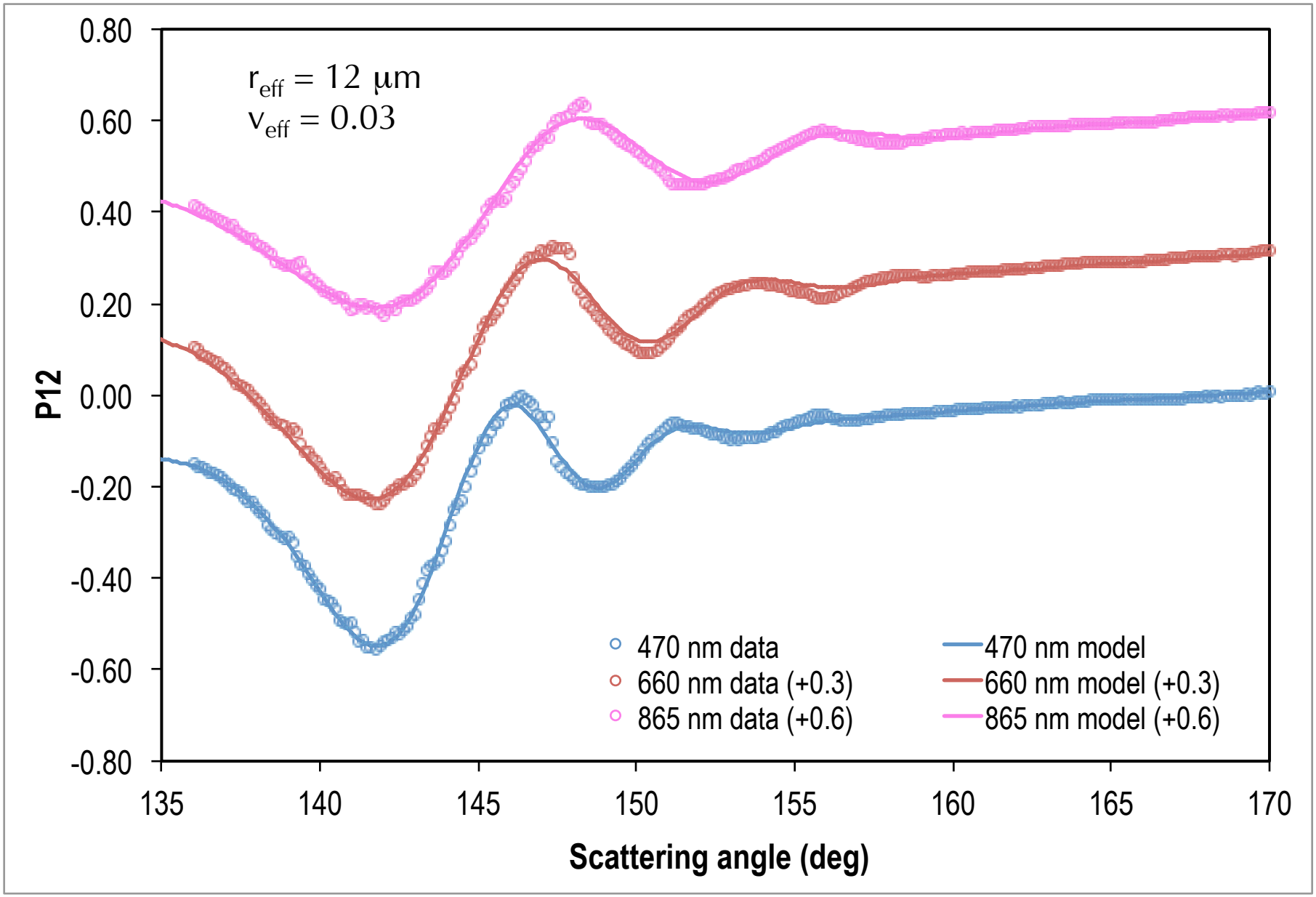
9 μm droplets are too small

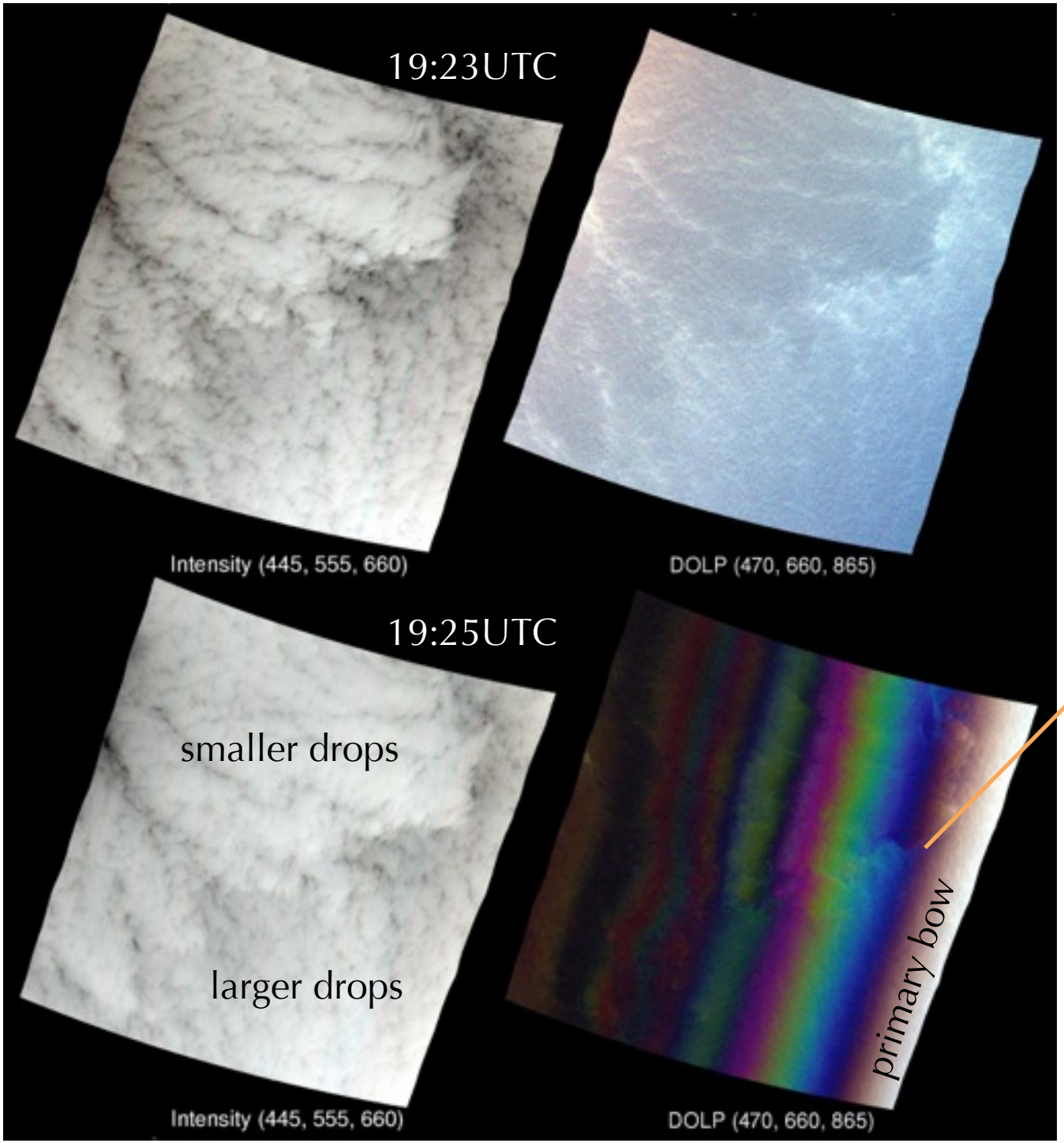


12 μm droplets are about right, but distribution is too narrow



12 μm droplets with wider droplet size dispersion fits well





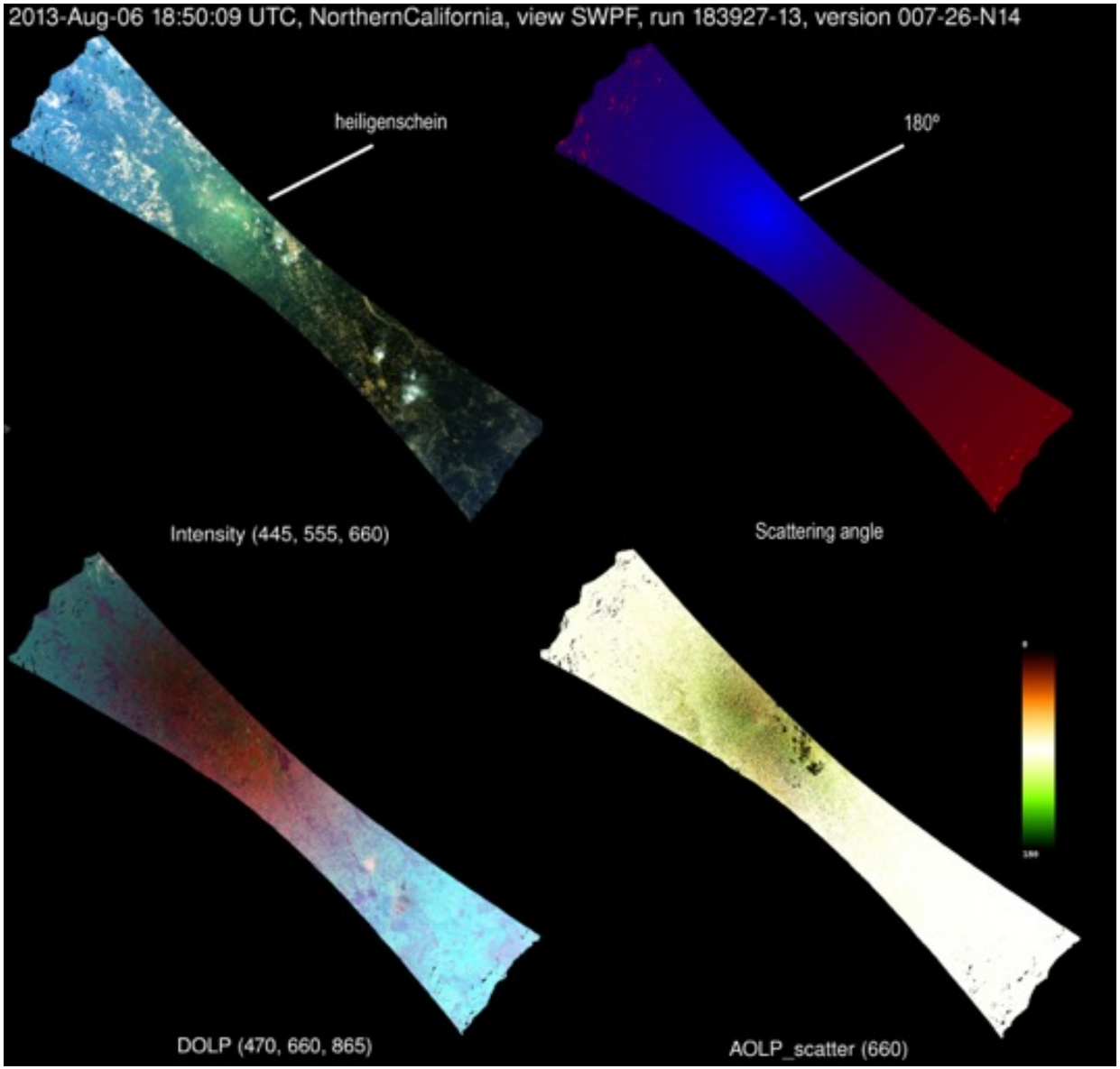
6 August 2013

Step and stare
29° forward view

discontinuity in fringe positions indicates change in droplet size

Step and stare
29° backward view

AirMSPI sweep over N. California, 6 August 2013, 18:50 UTC



Retroreflection from dewdrop-covered leaves

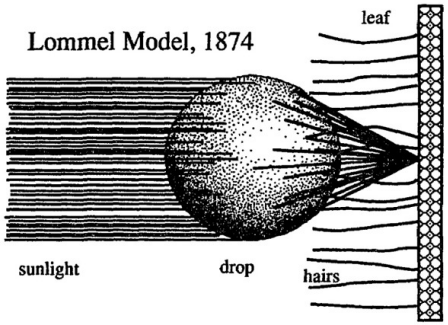


Fig. 1. Lommel's model relied on hairy leaves to hold the dewdrop 1 focal length from the surface.

Fraser, A.B. (1994). Appl. Opt. 21, 4539-4547

Lommel, E. (1874). Annalen Phys. Chemie, 10-21