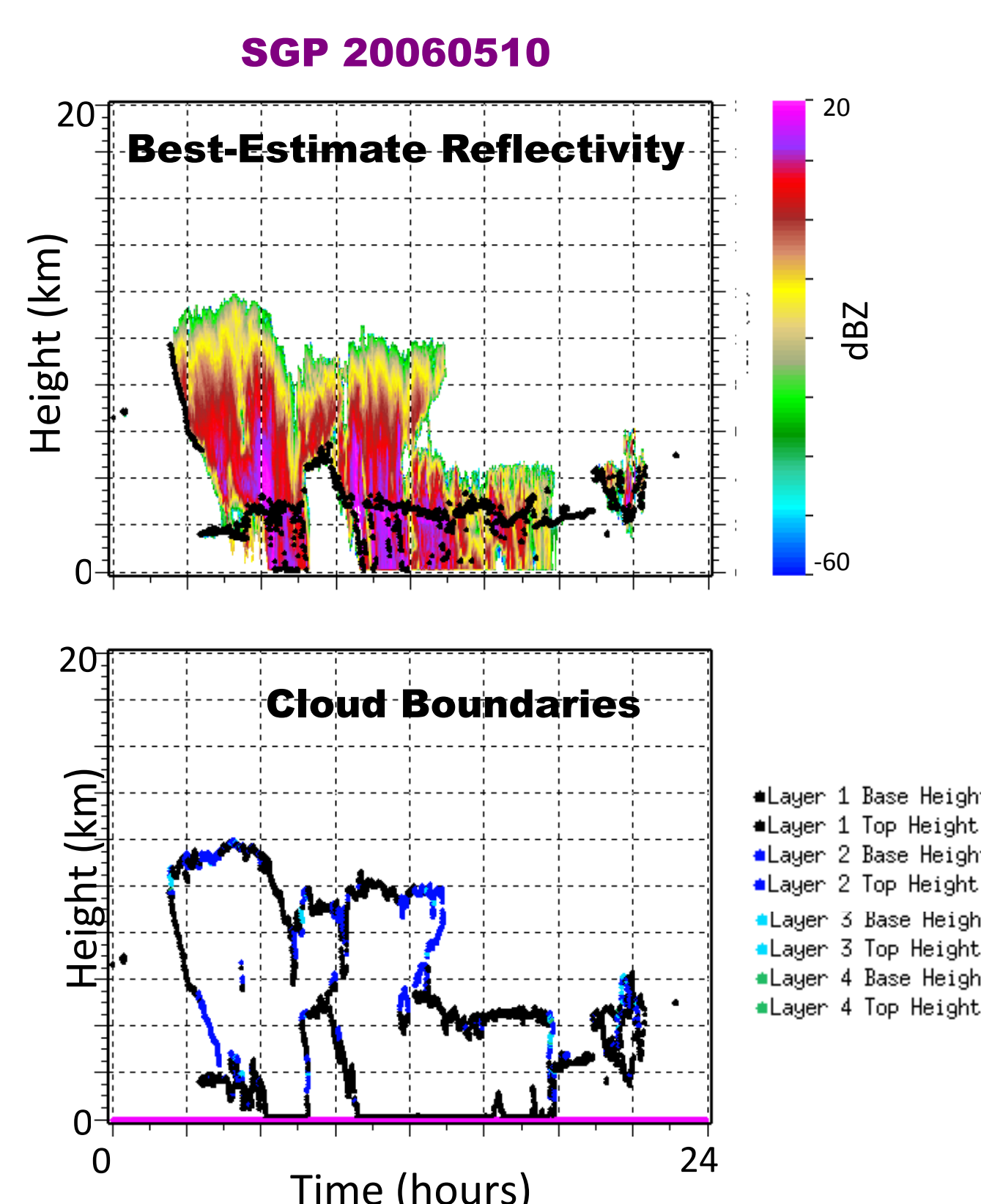


ARSCL Past: Record Complete



Decade-plus record at 4 sites

Processing has been completed for the original ARSCL VAP, based on the now-retired vertically-pointing 35 GHz MMCR cloud radar, plus Micropulse Lidar and Ceilometer.



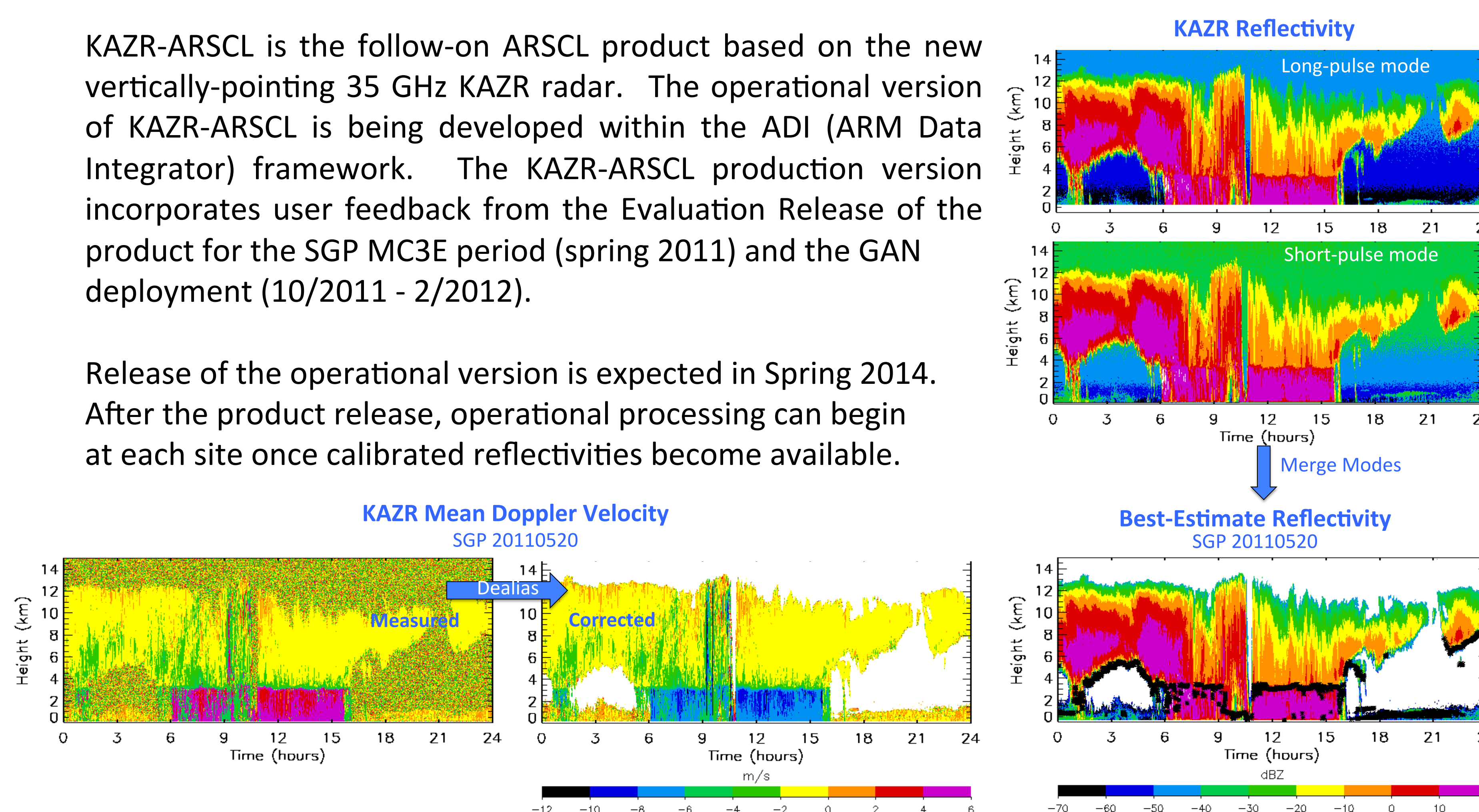
- Provides:
- Best-estimate Cloud Base
 - Hydrometeor time-height boundaries
 - Best-estimate reflectivity, Mean Doppler velocity

ARSCL Present Work

1. KAZR-ARSCL production version development:

KAZR-ARSCL is the follow-on ARSCL product based on the new vertically-pointing 35 GHz KAZR radar. The operational version of KAZR-ARSCL is being developed within the ADI (ARM Data Integrator) framework. The KAZR-ARSCL production version incorporates user feedback from the Evaluation Release of the product for the SGP MC3E period (spring 2011) and the GAN deployment (10/2011 - 2/2012).

Release of the operational version is expected in Spring 2014. After the product release, operational processing can begin at each site once calibrated reflectivities become available.



2. Characterizing ARSCL data quality:

An analysis is underway of several aspects of ARSCL data quality over the complete data record at each site.

Goals:

- Identify MMCR calibration shifts
- Identify saturated reflectivities
- Detect instrument failure timing / impact
- Identify impact of gradual sub-system degradation on overall ARSCL data quality

Quantities of interest include:

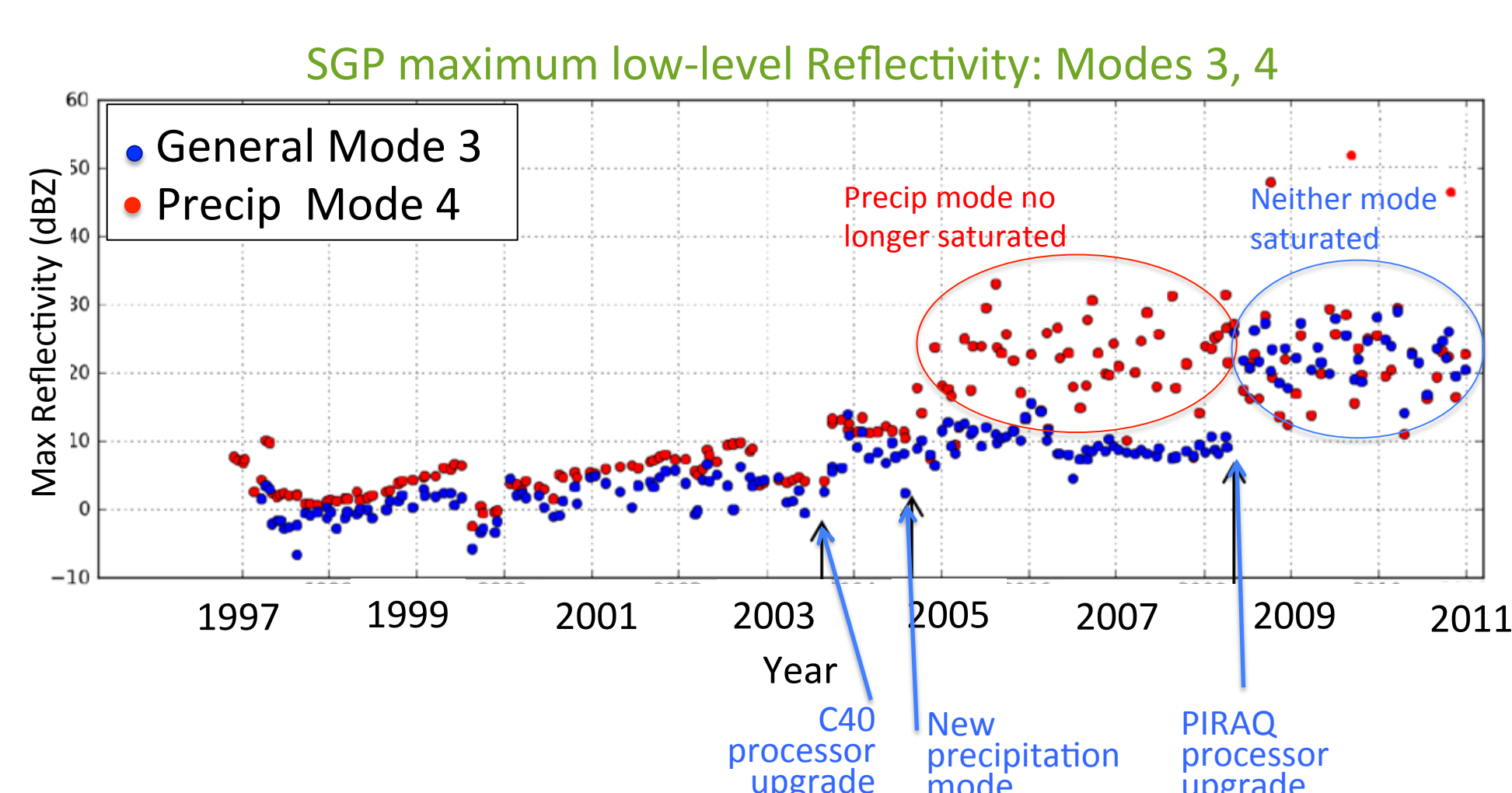
- Cirrus minimum reflectivity
- Maximum lowest gate reflectivity
- Noise power trends
- Copolar vs. cross-polar reflectivities

Sample results from limited-data feasibility studies of low-level saturation reflectivities and of cirrus minimum detected reflectivities are shown below.

MMCR Saturation:

Approximately one day per month with a significant period of drizzle or precipitation was selected over the SGP MMCR's deployment period. Maximum recorded reflectivity at the MMCR's lowest range gate is plotted at right for each date.

The impact of each processor upgrade and the new precipitation mode are evident.

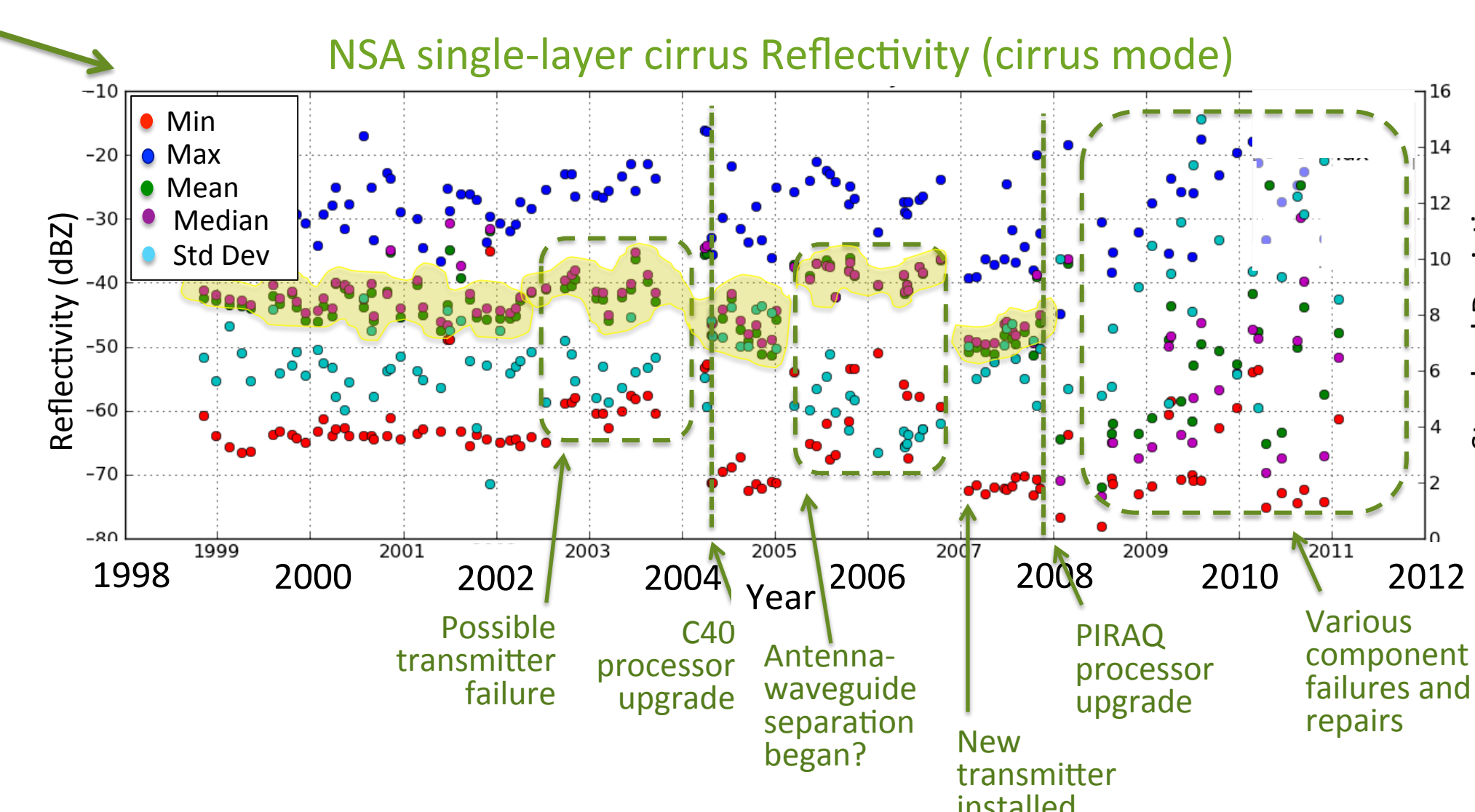
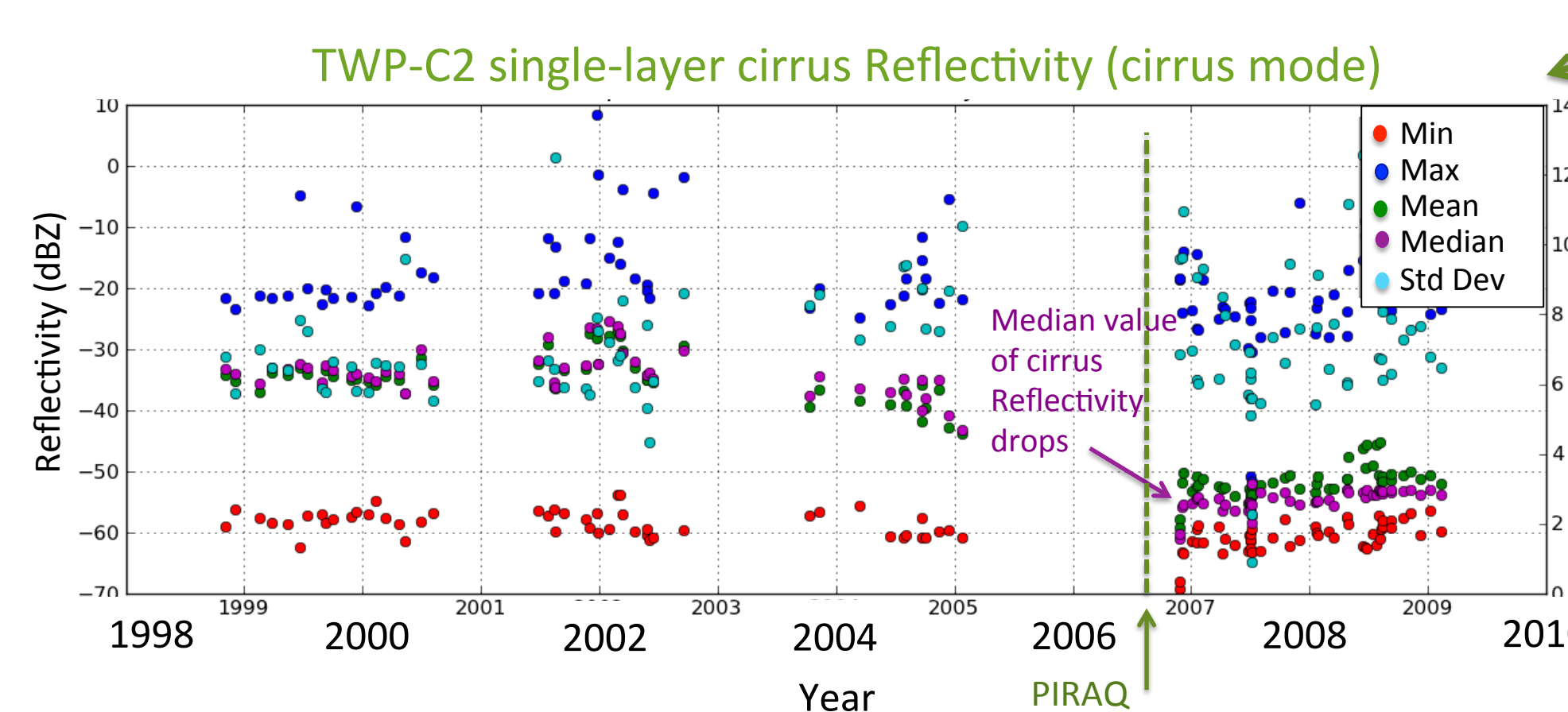


MMCR Sensitivity:

Approximately one day per month with primarily single-layer cirrus was selected. Reflectivity statistics were computed over all cirrus cloud data points for the day.

TWP-C2 (left) displays fairly stable cirrus sensitivity until the new PIRAQ processor was installed in mid-2006.

NSA, right, shows the sensitivity impacts from many MMCR issues.



'ARSCL Family' Data Record to date

Key

- ARSCL
- KAZR-ARSCL - planned
- WACR-ARSCL
- WACR-ARSCL-planned

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	
SGP																				
NSA																				
TWP-C1																				
TWP-C2																				
TWP-C3																				
AMF 1												NIM	FKB	HFE	GRW			PVC	MAO	
AMF 2																	GAN	M	AG	TMP