



SeaWiFS Status

Fred Patt

Ocean Biology Processing Group

February 5, 2010



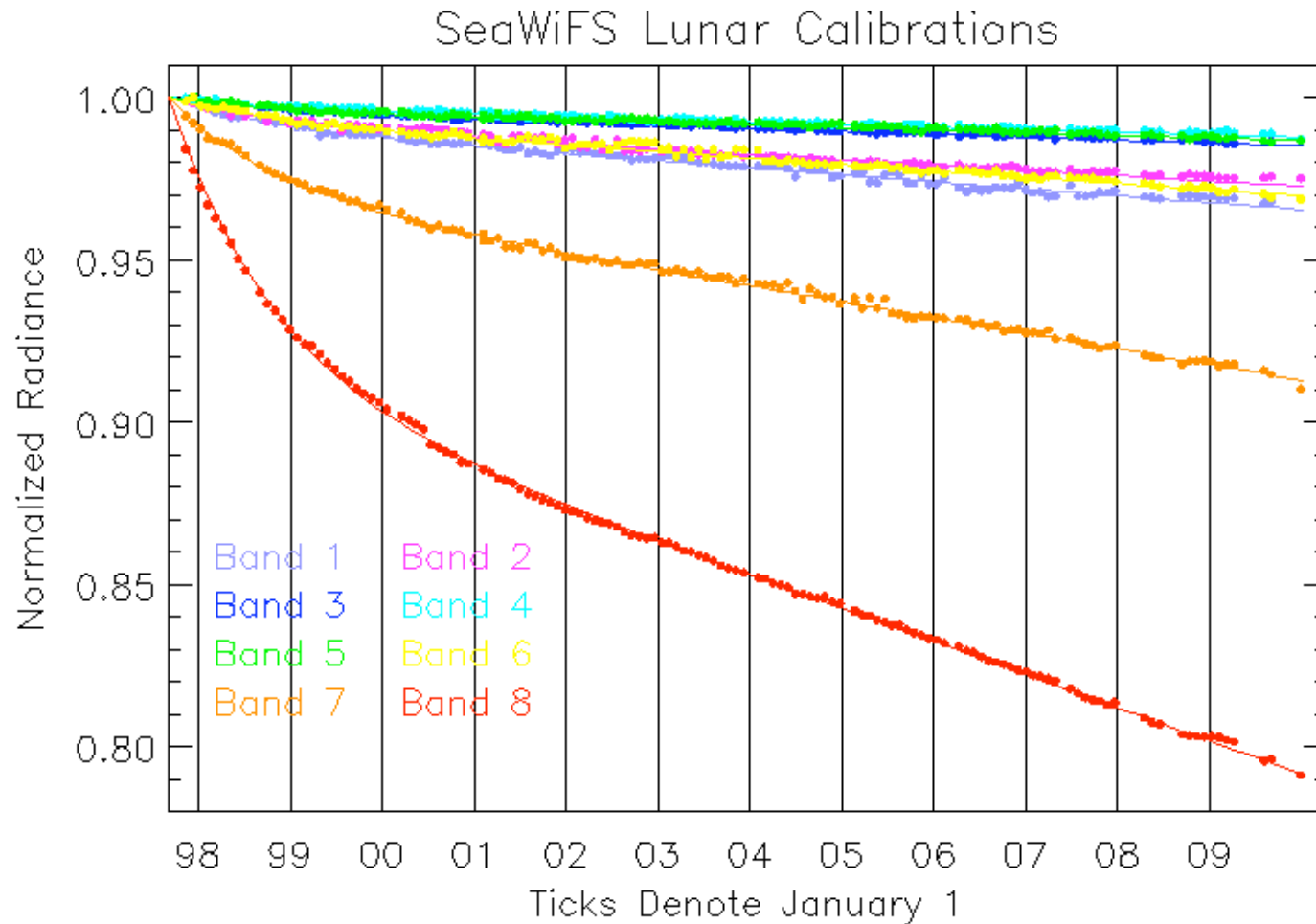
Current Spacecraft/Sensor Status



- SeaWiFS has been collecting data routinely since September 1997.
- The sensor is operating normally with no apparent degradation in performance; radiometric stability has been maintained with the lunar calibration.
- The OrbView-2 spacecraft has experienced failures or anomalies on multiple primary systems/components and is operating on the backup units:
 - Spacecraft computer
 - GPS
 - SeaWiFS interface unit
 - Battery Charge Regulator
- Although there have been gaps in data collection during the past two years, there are no indications of imminent mission-ending failure.
- The spacecraft orbit has not been maintained, and the equator crossing time has drifted from local noon to about 2 PM.



SeaWiFS Lunar Calibration

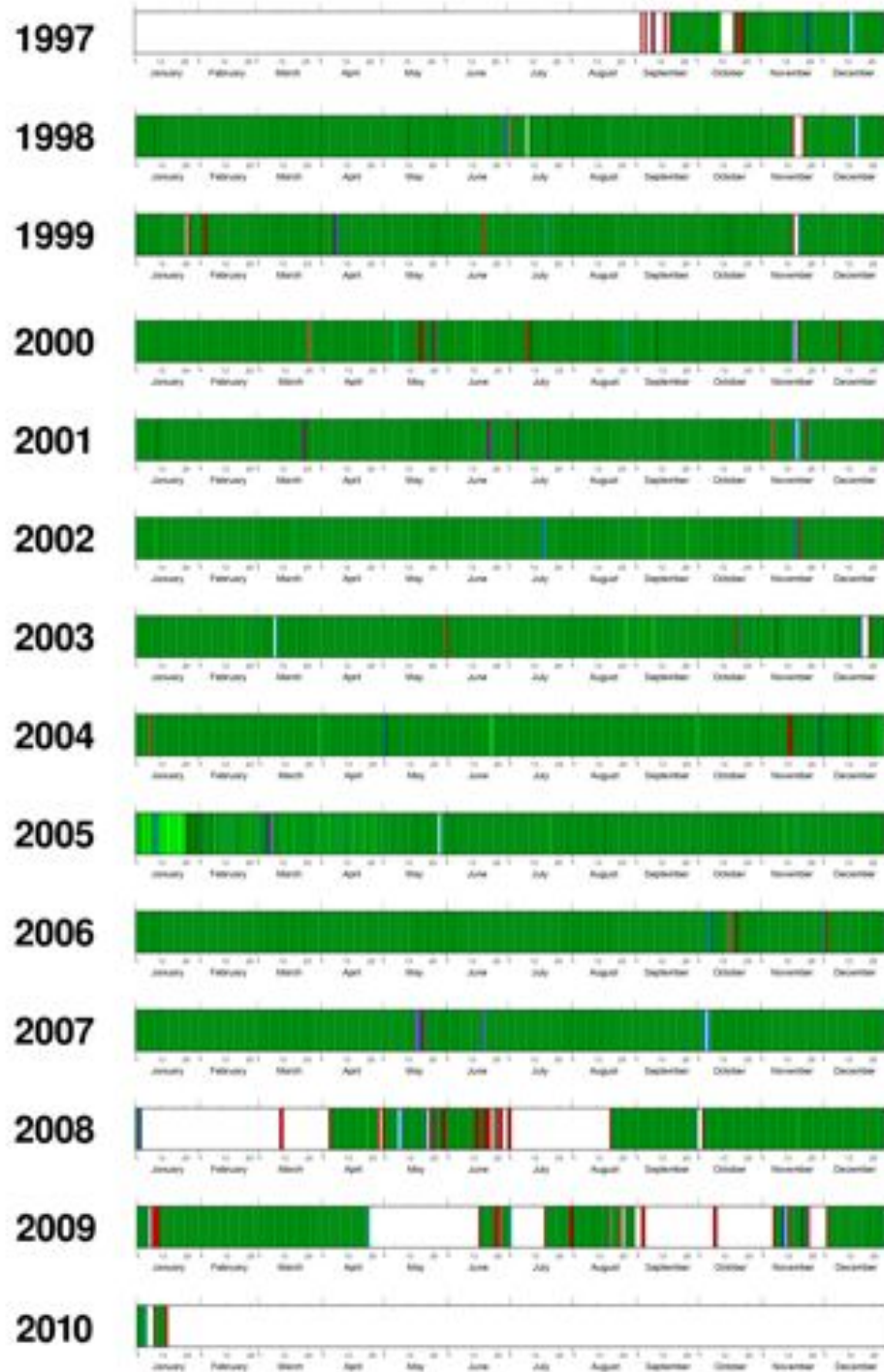


February 5, 2010

SeaWiFS Status



**Number
of
SeaWiFS
GAC
swaths
per
day**



February 5, 2010



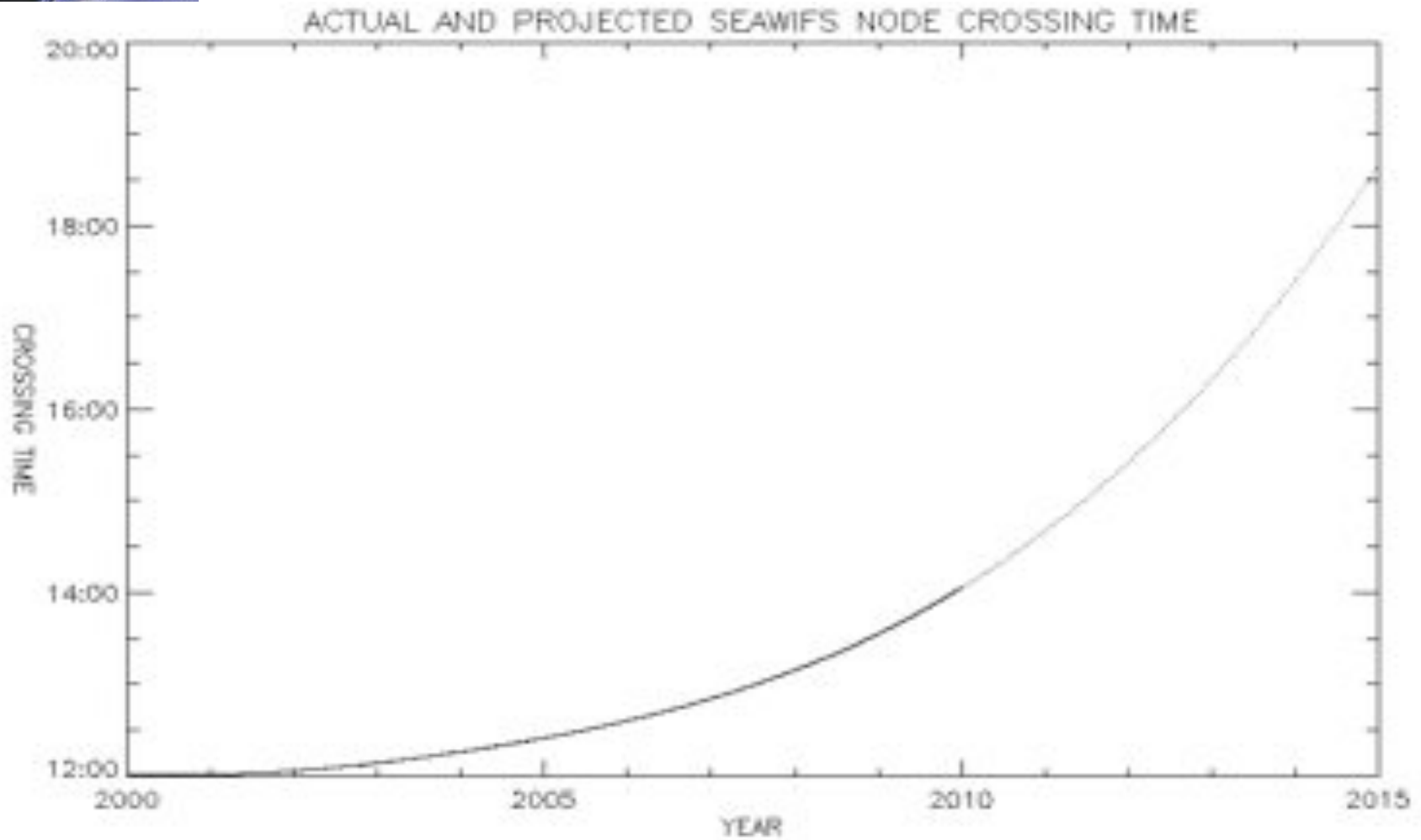
OV-2 Orbit Drift



- The drift in the equator crossing time is caused by a combination of orbit altitude decay (from 705 to 690 km) and inclination change.
- The current drift rate is ~8 degrees (32 minutes) per year, and will continue to accelerate.
- If left uncorrected, the following will occur:
 - Latitudinal coverage will decrease; this has already started, and based on the solar zenith angle limit (70°), useful data collection will effectively end sometime in 2013.
 - Navigation accuracy is degrading, and will be lost in early 2013.
 - Solar array power has already decreased significantly, requiring spacecraft Power Pointing to be implemented, and will continue to degrade.
 - Instrument temperatures are changing, and this will continue.
 - There is a corresponding drift in the scan angles for the lunar calibration, increasing the uncertainty of the radiometric stability.
 - The performance of the atmospheric correction will very likely deteriorate, as there is no heritage for Ocean Color with the current orbit.
- The orbit drift can be reversed by raising the orbit altitude.
 - A proposed orbit raising scenario was provided by NASA.
 - GeoEye has planned for the orbit raising to be performed by the end of April 2010 barring unforeseen circumstances.



Orbit Node Crossing Time

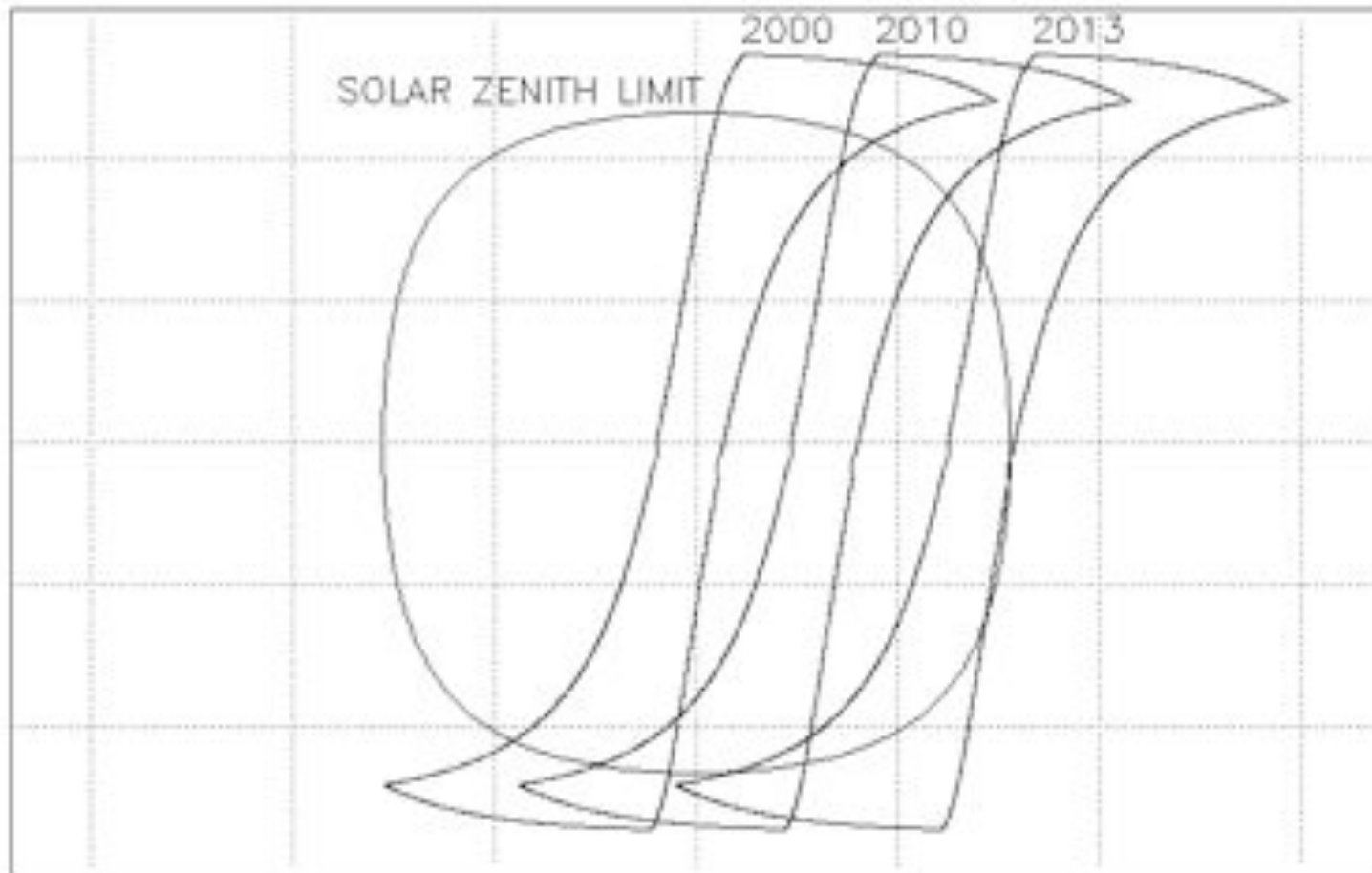


February 5, 2010

SeaWiFS Status



Loss of SeaWiFS Coverage with Orbit Drift



February 5, 2010

SeaWiFS Status



Summary



- Assuming that orbit raising is successful:
 - SeaWiFS is performing well and shows every indication of continuing to provide scientifically useful data.
 - Barring a catastrophic spacecraft system failure, there are no indications in the spacecraft telemetry of any mission-ending trends.
 - SeaWiFS continues to be the most useful source of information for characterizing other Ocean Color sensors (e.g., Aqua and Terra MODIS, MERIS, OCM2, etc.).