## **On-orbit performance of HY-1C/COCTS**

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## **HY-1C** mission

- □ Launched on Sept. 7, 2018;
- □ Successor of HY-1A (2002-2004) and HY-1B (2007-2016).



Sensor	Bands	Resolution	Swath
COCTS (Chinese Ocean Color and Temperature Scanner)	10 bands (8 bands from 412nm~865nm; 2 TIR bands)	1.1km	~3000km
CZI (Coastal Zone Imager)	4 bands (460nm,560nm, 650nm,825nm)	50m	~1000km
UVI (Ultra Violet Imager)	2 bands (355nm, 385nm)	550m	~3000km

### Daily global coverage



#### False color image on 16 Jan., 2019 (only with SZA<85° for scene center)

### **Cross-calibration of HY1C/COCTS by Aqua/MODIS**



### **Atmospheric correction algorithm**

- > NIR-based algorithm was adopted;
- LUTs for Rayleigh scattering, ratio of path radiance to Rayleigh radiance Lpath/Lr (instead of aerosol scattering LUTs), atmosphere diffuse transmittance were generated by vector RT model for coupled oceanatmosphere system (PCOART) (He et al., JQSRT, 2010; He et al, RSE, 2018).
- 20 aerosol models were defined based on Shettle&Fen(1979).



### **Estimated adjustment gains**





### **Estimated polarization response coefficients**



#### HY1C/COCTS vs. Aqua/MODIS 8-days composited Lwn (2018.10.24-31)





mW/(cm<sup>2</sup>umsr)

#### HY1C/COCTS vs. Aqua/MODIS 8-days composited Lwn (2018.10.24-31)



#### Validation with AERONET-OC measured Lwn



#### HY1C/COCTS vs. Aqua/MODIS daily chla (2018.9.18)



#### Daily Chla from HY1C/COCTS, Aqua/MODIS and SNPP/VIIRS



#### HY1C/COCTS vs. Aqua/MODIS 8-days composited chla (2018.10.24-31)





# HY1C/COCTS vs. Aqua/MODIS 8-days composited SST (2018.10.24-31)



# HY1C/COCTS vs. Aqua/MODIS and SNPP/VIIRS 8-days composited Chla, SST (2018.10.24-31)



# HY1C/COCTS vs. Aqua/MODIS and SNPP/VIIRS monthly Chla (2018 Oct.)





# HY1C/COCTS vs. Aqua/MODIS and SNPP/VIIRS monthly SST (2018 Oct.)





# Summary

- Based on cross-calibration method, adjustment gains and polarization response coefficients were derived for HY1C/COCTS;
- Ocean color and SST products were retrieved by HY1C/COCTS, and validated by comparing with Aqua/MODIS, SNPP/VIIRS and AERONET-OC data, indicating the reliability of HY1C/COCTS products.

### Chinese ocean satellite missions (2015~2025)



## **Thanks for your attention!**