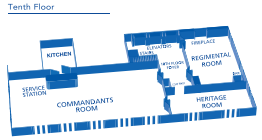

BENEFITS AND CHALLENGES OF GEOSTATIONARY OCEAN COLOUR REMOTE SENSING - SCIENCE AND APPLICATIONS

Co-Chairs: Antonio Mannino(NASA GSFC) & Maria Tzortziou (CCNY)

Ocean colour (OC) remote sensing from geostationary orbit (geo) provides the capability of high temporal resolution measurements (e.g., <hourly) that can revolutionize the scientific application and societal value of OC data from space. This capability is necessary to study nearshore waters where the physical, biological and chemical processes react on short time scales, and apply observations to monitor coastal water quality indicators, detect and track coastal hazards, and improve assimilation of satellite data into operational models. The Korean GOCI sensor is the only OC instrument to operate in geo. Its success has spawned a follow-on mission by the Koreans called GOCI-II. Other geostationary OC missions are in planning stages including NASA's GEO-CAPE, the European OCAPI, and others. Despite the advances made with GOCI data, much remains to be resolved to fully utilize OC data from geo. The objectives of this breakout session are to discuss (1) the unique science and applications value of OC observations from a geo-orbit; (2) the advantages of geostationary OC in combination with OC from polar orbiting sensors and the minimum set of requirements to achieve a quasi-global geostationary OC constellation; (3) key issues to resolve for successful application of geostationary OC data including atmospheric correction, sun-earth-sensor geometry, BRDF, sensor pointing stability, etc., and (4) the processes and new products possible from geostationary orbit including the challenges in reducing uncertainties to take full advantage of the high temporal resolution.

This session will build upon the 2012 IOCCG Working Group report on "Ocean-Colour Observations from a Geostationary Orbit" and the Geo Ocean Colour breakout session from the 2013 IOCS Conference.

Part I: ***The unique science and applications value of ocean colour observations from a geo-orbit***

14:30 **Introduction**
Antonio Mannino (NASA GSFC)

14:35-14:40 **Advantages and challenges for geostationary ocean colour remote sensing**
Kevin Ruddick (RBINS)

14:40-14:45 **Accuracy requirements on data products and their challenges**
Chuanmin Hu (U. South Florida)

14:45-14:50 **Geostationary applications relevant to ecosystems and fisheries**
Cara Wilson (NOAA NMFS)

14:50-14:55 **GEO-CAPE Ocean colour applications**
Maria Tzortziou (CCNY)

14:55-15:00 **How geostationary ocean colour products could be applied to improve 3D physical-biogeochemical models**
Marina Lévy (UPMC)

15:00-15:20 **Discussion**

Part II: ***Key issues and challenges to resolve for successful application of geostationary ocean colour data***

15:20-15:25 **Application requirements for geostationary ocean colour measurements**
Blake Schaeffer (EPA)

15:25-15:30 **Challenges in GOCI data acquisition and processing**
Wonkook Kim (KOSC)

15:30-15:35 **Geostationary atmospheric correction issues and future directions**
Ziauddin Ahmad (JHT / NASA GSFC)

15:35-15:40 **Water turbidity retrieval from a geostationary meteorological satellite - considerations for future ocean colour missions**
Quinten Vanhellemont (RBINS)

15:40-15:45 **Impact of multiple satellite samplings in a day on the study of phytoplankton dynamics**
ZhongPing Lee (U. Massachusetts)

15:45-16:00 **Break**

16:00-16:30 **Discussion**

Part III: ***Existing and future GEO OC sensors, challenges and next steps forward: Towards achieving a quasi-global geostationary OC constellation***

16:30-16:35 **Status of GOCI-II development**
Seongick Cho (KOSC)

16:35-16:40 **Update on European prospects for geostationary ocean colour**
David Antoine (Curtin University/LOV)

16:40-16:45 **GEO-CAPE ocean colour science and engineering challenges**
Antonio Mannino (NASA GSFC)

16:45-17:15 **Discussion**