

**SMOS Sea Surface Salinity Validation in the South China Sea***Ren, YongZheng<sup>1</sup>; Li, XiaoMing<sup>2</sup>; Dong, Qing<sup>1</sup>**<sup>1</sup>Center for Earth Observation and Digital Earth, CAS; <sup>2</sup>DLR*

Ocean salinity is one of important marine environmental dynamics parameters. Its change is closely related to marine environment and global climate change. Satellite SMOS launched by the ESA in November 2009 has the mission of Sea Surface Salinity (SSS) measurement with L band microwave radiometer. Applied Research in Geomatics, Atmosphere, Nature and Space (ARGANS) Company develops the SMOS Level 2 Ocean Salinity (L2OS) processor in collaboration with Expert Support Laboratories [Zine et al., 2008]. In L2OS processor a series of physical models are applied to auxiliary data (SST, wind, etc.) and a first guess SSS, to compute the brightness temperature that should be measured at a specific polarization and geometric configuration. These values are transported to SMOS antenna level and then compared to actually measured sensitivity of L-band brightness temperature (T<sub>b</sub>). An iterative process allows minimization of the difference between modeled and measured values, until identifying a retrieved SSS for this grid point. Three different models are proposed for the effect of ocean surface roughness in L-band emissivity and then three retrieval processes will be run in parallel, and three SSS values provided in the L2 output product.

In this paper, SSS retrieved with three different models are validated with in situ measurements from CTD in the South China Sea. The direct comparison of SMOS SSS to in situ data shows that the RMS is in the magnitude of 0.7 practical salinity unit (psu). An improved surface roughness model for South China Sea is being considered and expected to be presented in the full paper submission.

Dragon project id

08 COASTAL ZONES (ID. 5338)

# SMOS海表盐度在中国南海的印证

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海水盐度是海洋环境动力学重要参数之一。盐度的变化与海洋环境及全球气候变化息息相关。欧空局(European Space Agency, ESA)于2009年11月发射的 SMOS卫星均设计了用L波段微波辐射计测量海表盐度的方案。针对SMOS亮温数据, ARGANS ( Applied Research in Geomatics, Atmosphere, Nature and Space ) 公司与ESL ( Expert Support Laboratories ) 实验室合作开发了SMOS卫星2级数据海表盐度反演算子(L2OS, Version 5.50)[Zine et al., 2008]。通过输入附加的数据(如海表温度, 海面风场等)和第一猜测海表盐度, L2OS算子采用一系列的物理模型模拟不同极化和成像几何下的亮温。然后将亮温转换为SMOS卫星天线亮温后与实际卫星天线测量的亮温进行比较。根据比较结果对输入的海表盐度进行修正, 然后重新模拟亮温并与观测值比较, 直到模拟值与观测值一致时停止迭代计算, 此时的海表盐度认为是真实的海表盐度。L2OS算子采用了三种不同的海表面粗糙度模型计算L波段发射率, 因此三种海表盐度反演过程同时进行后可提供三种SMOS海表盐度产品。

本文采用中国南海CTD海表盐度实测值对三种海表盐度产品进行印证。反演的SMOS盐度与现场测量结果比较结果显示均方根误差是0.7psu。改进的南海海面粗糙度模型将在提交全文时候给出。