Analysis of Sea Surface Salinities as seen by SMOS

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The Soil Moisture and Ocean Salinity (SMOS) mission provides for the first time sea surface salinities (SSS) observations from a satellite using L-Band radiometry. Generally natural emissivity of sea water in the L-Band is sensitive to the surface salinity but the measurements are susceptible to a number of perturbations like contamination due to sun glint as well as image reconstruction issues like land and ice in the FOV and Radio Frequency Interference which needs to be corrected for. Furthermore, the preliminary SSS data show a bias dependent on latitude and time due to direct solar contamination, sun illumination and the evolution of the antenna temperature along a year etc. A correction algorithm will be presented that removes much of the remaining errors in the available salinity products.
As part of this a latitudinally dependent bias is being determined and removed from the data.
The resulting monthly SSS maps are shown to be consistent to the mean salinity distribution as well as their annual variabilities known from climatological data. The variable input of freshwater from the major rivers is also observable. The validation with Argo data shows a global mean accuracy of 0.4 against 1.2 g/kg before the correction. A discussion on future improvements of the processing steps is also given.