

EGU2020-9379

<https://doi.org/10.5194/egusphere-egu2020-9379>

EGU General Assembly 2020

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## Atmospheric boundary layer parameters retrieval from Stepped Frequency Microwave Radiometer measurements in tropical cyclones

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Active microwave sensing using satellite instruments has great advantages, since in this range the absorption by clouds and atmospheric gases is noticeably reduced, it allows for round-the-clock and all-weather monitoring of the ocean. One of the main problems is concerned with obtaining the dependency between the RCS of radar signal scattered by the wavy water surface and the parameters of the atmospheric boundary layer in hurricane conditions. To obtain this dependence, we used field measurements of wind speed in a hurricane from falling NOAA GPS-sondes and SAR images from the Sentinel-1 satellite. However, there is the problem of correct collocation of remote sensing data with field measurements of the atmospheric boundary layer parameters, since they are separated in time and space. In this regard, the amount of data suitable for analysis is very limited, which forces us to look for new data sources for processing. A six-channel SFMR radiometer is also installed on board of NOAA research aircraft that measures the emissivity of the ocean surface beneath the aircraft. Thus, it becomes possible to relate the radiometric measurements of SFMR with the parameters of the atmospheric boundary layer in a tropical cyclone obtained from wind velocity profiles, since they are carried out as close as possible in time and space. Using this relation, the SFMR data and the hurricane radar images were analyzed together and an alternative method was found for constructing the dependence of the RCS on the parameters of the boundary layer.

This work was supported by the RFBR projects No. 19-05-00249, 19-05-00366, 18-35-20068 (remote sensing data analysis) and RSF No. 19-17-00209 (GPS-sondes data assimilation and processing).

**How to cite:** Rusakov, N., Poplavsky, E., Ermakova, O., Troitskaya, Y., Sergeev, D., and Balandina, G.: Atmospheric boundary layer parameters retrieval from Stepped Frequency Microwave Radiometer measurements in tropical cyclones, EGU General Assembly 2020, Online, 4–8 May 2020, EGU2020-9379, <https://doi.org/10.5194/egusphere-egu2020-9379>, 2020

