

EARTH OBSERVATION SYMPOSIUM (B1)  
Earth Observation Sensors and Technology (3)

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Science Laboratory of Santa Maria - LACESM/CT - UFSM, Brazil, leonardozavareze@gmail.comANTENNAS OPTIMIZATION FOR LOW FREQUENCY RADIO INTERFEROMETER FOR SOLAR –  
TERRESTRIAL INTERACTIONS AND RADIO ASTRONOMY**Abstract**

The Southern Space Observatory (SSO) from the INPE's Southern Regional Space Research Center, (SSO, 29,4 S, 59,8 W), at São Martinho da Serra, RS, Brazil, has an interferometric arrangement similar to the Low Frequency Array (LOFAR) Prototype Station (LOPES). Previous results from analysis of the electromagnetic spectrum in SSO have indicated a low level electromagnetic interference in the 10 – 240 MHz frequency range. Such results show that the SSO electromagnetic environmental conditions are similar to those sites where LOFAR stations are working in Europe, therefore, making the site of SSO suitable for the installation of sophisticated and sensitive radio interferometric systems. Currently the prototype radio interferometer installed at the SSO employs two Fork type antennas, which allow measurements in the frequency range of 20 to 80 MHz. In order to measure the Galactic Noise it is necessary that the system noise (preamplifier and transmission lines) should be lower than the Galactic Noise. This work presents an optimization for the prototype radio interferometer antennas by evaluating

variations in dipole arm length and the antenna height. The simulations are performed by using NEC-2 software. The optimization aim is to increase the utilizable system bandwidth. The LOFAR Station Systems permits to: i) monitor the space weather, in real time, the ionosphere, the particle precipitation and the disturbances at the Earth's Magnetosphere, ii) the determination of their effects on regions such as the South Atlantic Magnetic Anomaly (SAMA), and iii) Radio Astronomy – Astrophysics.