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SUBMITTED ABSTRACT

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1.	**Title of the paper**	Operational Early Warning System in Southern Brazil - Blending Remote Sensing and Surface Observations for Precipitation Nowcasting

2.	**Institution**	SIMEPAR - Parana Meteorological Service			
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4. Abstract of the paper

In South America, especially northeastern Argentina, Paraguay and Southern Brazil are regions particularly prone to severe weather (mainly intense precipitation, hail, extreme lightning incidence, gust winds and occasional tornadoes). In the south of Brazil, monthly precipitation distribution is very uniform throughout the year. The major economical activity in this region is agro-industry and energy production (responsible for more than 35% of hydro-power energy used in the country) directly dependent on precipitation distribution and water availability. The operational routine in weather monitoring and forecasting has changed a lot in the past years. Besides conventional information, well know in operational centers, data from remote sensing such as satellite, weather radars and lightning detection networks provide vital information in real time, as the main tool for severe weather detection and forecasting. Systematic observations with deployment of polarimetric weather radars has been increasing in Brazil, involving mainly S-Band systems, but also C-Band and X-Band. In southern Brazil an operational center for nowcasting and severe weather monitoring and forecasting has installed a dual polarization S-Band radar which is integrated with other single polarization S-Band radars, a dense automatic network of raingauge and satellite information to provide precipitation estimation for hydropower generation and an early warning system for severe precipitation events in the region. This paper will present our experience on development of precipitation estimation algorithm based in radar polarimetric variables, integrated with raingauge measurements and satellite estimation as well as usage of radar and lightning data for nowcasting severe weather events, mostly storms responsible for extreme precipitation which are tracked using TITAN (Thunderstorm Identification, Tracking, Analysis and Nowcasting) algorithm to identify their development stage and to evaluate how the polarimetric signatures compare and change during the evolution in the monitored area. This paper presents an analysis of warm season MCS occurrence in a region monitored with a S-Band polarimetric weather radar and a network of lightning detection sensors used to identify the electrification processes within these storms and their relation with radar signals, specially polarimetry.