

IAF EARTH OBSERVATION SYMPOSIUM (B1)  
 Earth Observation Applications, Societal Challenges and Economic Benefits (5)

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WEATHER FORECASTING AND THE RENEWABLE POWER INDUSTRY: A SATELLITE SYSTEM  
 FOR ENERGY PROVIDERS AND SUPPLIERS

**Abstract**

Accurate weather forecasting is crucial for energy providers and suppliers. While mid-term trends can be predicted with relative reliability, it is difficult to predict short-term trends, including unexpected peak-loads. Those can be caused by heavy cloud cover, which increases electricity consumption in private households and at the same time lowers the renewable energy-based electricity production. At times of peak loads, energy providers need to procure energy from additional sources which can result in high unexpected costs. Therefore, energy providers and suppliers have a considerable interest in more accurate weather prediction systems. Today, 94In the framework of a team project at the 2018 Space Studies Program of the International Space University, 33 students and young professionals teamed up with a satellite-powered weather data company, a regional energy provider, as well as several industry experts to investigate the concerns of the renewable power industry and evaluate space-based systems that could improve on the current state-of-the-art in weather forecasting. An overview of the relationship between

weather forecasting and the renewable power industry is presented in this work, with a focus on solar and wind energy. Furthermore, a space-based system to enhance regional weather forecasting is summarized. In addition, the effects of accurate weather forecasting on power suppliers scheduling and costs saving are presented. This work focuses on the space aspect of accurate weather prediction. The findings can help energy providers decide if it is worth investing in more accurate weather forecasting.