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Presentation title:

SENSOR BASED ADAPTION OF TREATMENT STRATEGIES

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Summary:

With digitalisation of spreaders, recent development in wireless data transmission and road sensor technology the potential amount of data available for winter maintenance decisions grows rapidly. Thus it becomes more and more difficult to control data quality distilling the necessary information for decision making about treatment strategies. The research project "WinterFIT" of ASFINAG, ZAMG and Vienna University of Technology deals with issues of an optimal sensor infrastructure implementation in order to cover large road networks with automated treatment strategy suggestions. Based on a recently developed holistic winter maintenance model, the integration of different types of RWIS – sensors together with extensive field measurements it was possible to achieve considerable improvements regarding decision making in winter maintenance. Combining this information from the field with the new European-wide weather nowcasting system INCA a real-time optimization of treatment strategies for the entire highway network in Austria becomes feasible. The Integrated Nowcasting Through Comprehensive Analysis (INCA) system, which has been developed at ZAMG (Central Institute for Meteorology and Geodynamics), provides improved numerical weather forecasts especially in the nowcasting range (0-6 hours ahead) on a very high resolution (1 km x 1 km). The basic idea of INCA is to complement and improve NWP direct model output using real-time observations, remote sensing data and high-resolution topographic data. The INCA system provides near-real-time analyses and forecasts for the parameters temperature, humidity, wind, precipitation amount, precipitation type, cloudiness, and global radiation. Based on the research results it was furthermore possible to build a scientific background for the selection and localization of road sensors. The paper gives an overview of the findings regarding a nowcasting and sensor based adaption of winter maintenance treatment strategies. Furthermore the necessary requirements and accuracy of weather forecasting, sensor selection and model calibration are covered as well.