

Application of model based reasoning techniques to improve data quality with NASA GLOBE Observer and NASA SOLVE products. J. G. Olgin^{1,2}, D. Pennington¹, ¹University of Texas at El Paso, 500 W. University, El Paso, TX 79968, jolgin@utep.edu, ddpennington@utep.edu, ²El Paso Community College, 9570 Gateway N. Blvd, El Paso, TX 79924, jolgin@epcc.edu

Introduction: The Global Learning and Observations to Benefit the Environment (GLOBE) Program run by the National Center for Atmospheric Research (NCAR), University Corporation of Atmospheric Research (UCAR), the National Science Foundation (NSF) and the National Aeronautics and Space Agency (NASA). Its goal is to build a global collaboration to improve Earth's environment and promote academic advancement in environmental stewardship, literacy and discovery. Environmental data collection is open to a global audience using the GLOBE Observer app for smart devices. Data collected in a wider range of topics, such as cloud formation and mosquito habitats, offers scientists a greater volume and variety of data that can be utilized. However, community science data collection has had problematic issues; most common is lower data quality. Lack of knowledge and skill of the community scientist affects productivity in data collection. Mitigation efforts for improved data quality have been introduced, such as designing community science projects that include statistical analysis to identify reliable data and introducing training modules to better instruct citizen scientists in their data collection. Here we present a novel training method using model based reasoning (MBR), addressing issues in cloud data quality using the GLOBE Observer app (GO). We present an initial analysis of the top three data quality issues in cloud identification using GO, and analyze the application of MBR training modules compared to existing traditional training modules. Results from this study are presented here, as well as future applications in community science training techniques in NASA's SOLVE program.

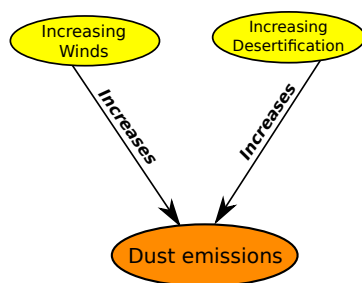


Figure 1: Example of model base reason (MBR) technique using concept maps.