Plain Language Summary: Reliability information of satellite precipitation products is required for various applications, such as agricultural monitoring, public health, and education, as well as weather monitoring and disaster prevention. This study confirms effectiveness for a reliability flag of the Global Satellite Mapping of Precipitation Near-Real-Time precipitation product (GSMaP_NRT), which is developed to characterize the reliability of GSMaP_NRT data "simply" and "qualitatively".
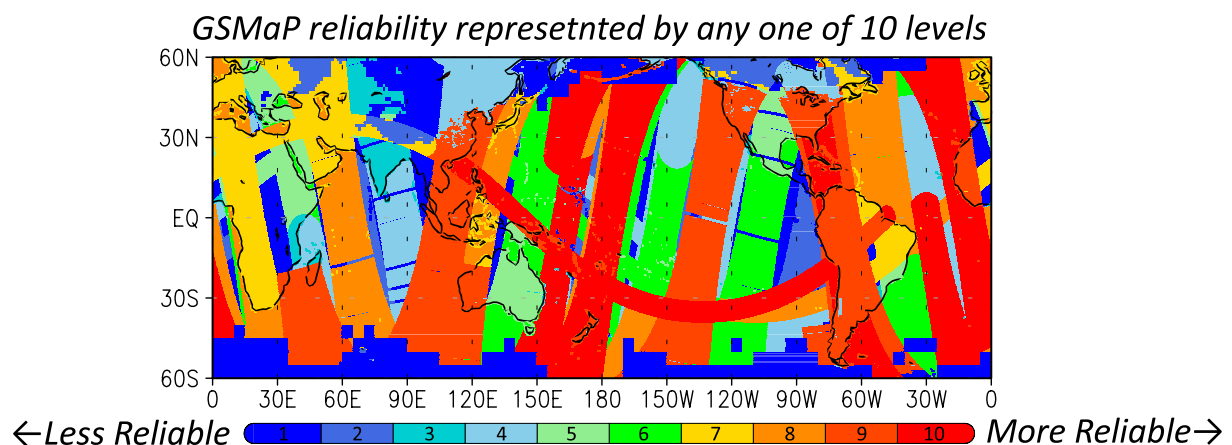

Figure 1. An example of spatial distributions of the reliability flag. The same values occur along the observation swath of the satellite sensor. The values are generally lower at high latitudes because cold regions are classified as providing less reliable information.
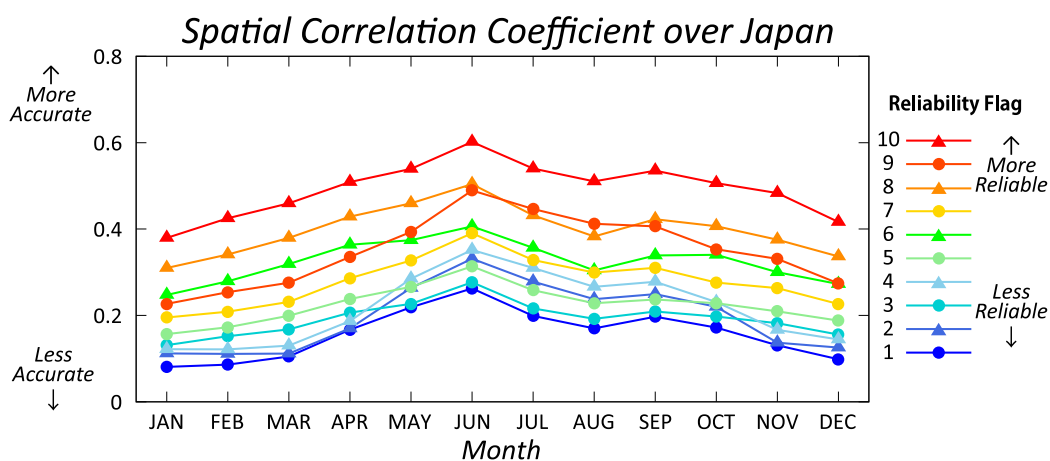

Figure 2. Monthly mean values of spatial correlation coefficient for each reliability flag value over Japan. Seasonal changes in the GSMaP accuracy are clearly seen; accuracy gets better in the summer and worse in the winter. All levels of the reliability flag reflect the seasonal changes.

- We described the algorithm of the GSMaP_NRT reliability flag (Fig. 1), considering three major factors, and found that the flag represents the differences in GSMaP accuracy.
- Seasonal changes in the GSMaP errors were well represented by the reliability flag (Fig.2).
- This study also raises the possibility of improving the reliability flag by using information related to heavy orographic rainfall by showing how the error features of heavy orographic rainfall differ from those of the total rainfall.