

Representative Patent 01

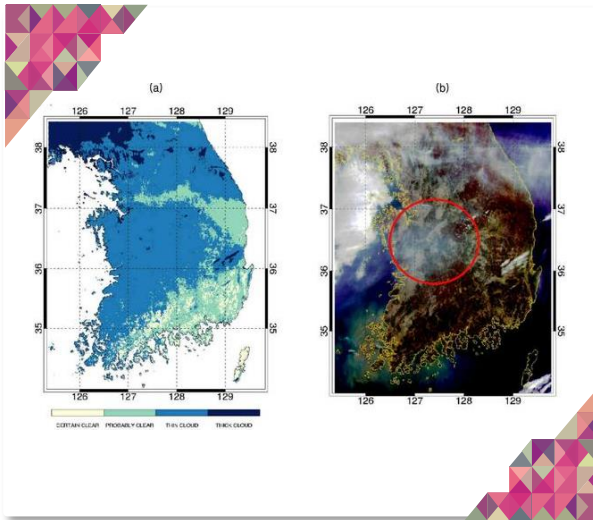
- ❖ Title of Invention : **Cloud area detection device and cloud area detection method**
- ❖ Application Number. : KR2017-0072716

Application of Technology and Field of Use

◆ **Field of application of weather satellite data through image analysis**

◆ **Existing weather image analysis is limited in detection ability because reflectances are mixed.**

- If the reflectance for visible light is used, dark clouds can be detected, but it is difficult to detect light clouds because the reflectance of clouds and the reflectance of the ground below the clouds are mixed.



<Representative drawing>

Features of Technology

- Acquiring information about the earth's reflections of sunlight reflected by the atmosphere on the surface of the earth and on the surface of the earth in the satellite observation data
- Estimating the background reflectance for the surface of the earth based on a pre-modeled bidirectional reflectance distribution (BRDF) model for the surface of the earth
- Calculating the top of atmosphere (TOA) reflectance from the information about the earth's reflections
- Calculating a first difference value that is a difference between the TOA reflectance and the background reflectance
- Detecting pixels with clouds among the plurality of pixels as a cloud mask area based on the TOA reflectance and the first difference value

Climate/Environment

Representative Patent 01

Technical Effects

◆ Possible to increase cloud detection capability

- It is possible to detect not only dark clouds but also light clouds that are difficult to detect with the naked eye, based on the difference between the reflectance calculated through the observed reflected light from the earth and the background reflectance estimated based on the BRDF model.

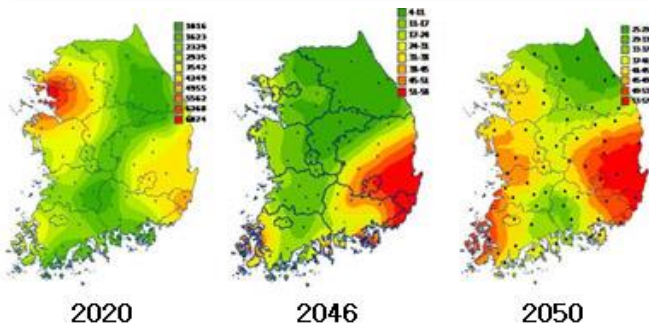
◆ Possible to increase detection speed

- Reduction in the amount of observation information required for cloud detection, because it is possible to detect even thin clouds without considering the temperature information according to infrared rays.
- The step of synthesizing and judging existing temperature information and reflectance information can be omitted, thereby enabling rapid cloud detection.

◆ Possible to accurately observe clouds with only visible channel

- The Geostationary Ocean Color Imager(GOCI), etc., which does not include a sensor that detects infrared channels, can observe even thin clouds through visible channels.

Social, Environmental, Economical Effects



<Future Farmland Drought Forecast Scenario Map>

◆ Increase in weather forecast accuracy

- Accurate weather forecast is possible because even light clouds can be detected.

◆ Possible to contribute to the development of drought prediction technology

- It is expected that information on the soil moisture content can be more accurately inferred by adding accurate atmospheric moisture information for detection of even thin clouds to the existing precipitation, radiant heat, ground surface temperature, and wind information.
- It is expected that technology development for predicting drought in the medium and long term is also possible through accurate soil moisture content.