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CLOUD SCREENED SURFACE RADIATION ESTIMATES WITH HIGH RESOLUTION FROM GOES-9 DATA

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1. ABSTRACT

Surface radiation budgets from GOES-8/9 are produced in real time by NOAA/NESDIS in support of GCIP activities. This product has a spatial resolution of 0.5 degrees. Following a method based on the GCIP procedure we will generate estimates of net solar radiation at high resolution (4 km) for semi-arid regions of Arizona and Mexico. We intend to assimilate these data into a mesoscale atmospheric model. At this high resolution, cloud screening must be done carefully. We have developed an effective and efficient procedure that allows for seasonal effects and random noise.

The main purpose of the cloud screening procedure is to determine clear and cloudy radiance values of GOES-9 data for real time periods. The GOES-9 data at the original 1 km resolution (1200x1000) are reduced to 300x250 pixels at 4 km resolution by generating target areas including 16 of the original pixels. For each target area the procedure provides the number of cloudy and clear pixels in addition to their radiance values. The atmosphere is assumed cloudy if the radiance of each of the original pixels is larger than a value equivalent to 35% albedo and assumed clear if the radiance is less than the radiance of a running mean plus the standard deviation of the clear sky value for each target area.

Finally, there is an adjustment of the radiance for the cloudy and clear regions to provide for partly cloudy conditions. Each day when the procedure is run the first guess radiance values for clear and cloudy conditions are automatically updated.

2. ACKNOWLEDGMENT

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3. REFERENCES

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