Atmospheric Correction of New Zealand Landsat Imagery

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Abstract

In this study, MODIS data for New Zealand was downloaded and evaluated as input to the 6S atmospheric correction model. Data for one year were downloaded for aerosols, water vapour and ozone and trends of this data were studied. The sensitivity of retrieved reflectance of several targets to changes in the atmospheric components as seen in the MODIS data were also analysed. Several methods were developed for using this data for atmospheric correction and the output compared to a commercial atmospheric correction package (ATCOR 2).

In addition, ground measurements were used to confirm the accuracy of the MODIS data. This involved both data obtained from NIWA and readings taken with a hand held MICROTOPS instrument. These readings showed that the MODIS data has some inaccuracies. This can result in a significant error in the retrieved reflectance, especially for darker targets, such as forest. Therefore caution should be exercised when using aerosol values from MODIS in an atmospheric correction. However, the results for water vapour and ozone were reasonably close, giving confidence for using MODIS ozone and water vapour in atmospheric correction.

Ground measurements were also taken of targets with a GER 2600 Spectroradiometer and these readings compared to the atmospheric corrections of the same targets. This confirmed the accuracy of the atmospheric correction methods.

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