PRELEMINARY ANALYSIS OF DATA PROCESSING FOR GEOSTATIONARY OCEAN COLOR REMOTE SENSING DATA FROM GOCI/COMS

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1. INTRODUCTION

The communication, ocean and meteorological satellite(COMS) will be launched in march 2010. This satellite has three payloads for communication evaluation and ocean color monitoring and operational meteorological observation[1]. The geostationary ocean color imager (GOCI) has been developed to remotely sense the visible and near-infrared signal that was radiated from ocean surface and became weaker through the atmospheric condition[2]. The GOCI data processing system (GDPS) has been developed from 2003 to 2009 to extract ocean geophysical products as suspended sediment concentration, Chl-a, red-tide index, etc from the radiance of top of atmosphere(L_{TOA}) using atmospheric correction , bidirectional correction and each relevant algorithms[3]. The preliminary image processing result can be processed until in-orbit test(IOT) and can be analyzed to the verification of GDPS algorithms and the evaluation of performance of it.

2. METHODOLOGY

The source code peer review of GDPS algorithms was performed in software development phase. And the functional test and system level test was performed in software verification phase. The sample data for these tests were generated by the sensor manufacturer. So this data has some distorted characteristics to demonstrate geostationary observation because it was derived from polar-orbit sun synchronized ocean color satellite data.

In the in-orbit test period, the Korea ocean satellite center (KOSC) can receive the ocean remote sensing data from GOCI/COMS through 9m L-band antenna and RF system. The image preprocessing system(IMPS) can retrieve the L_{TOA} from received signal. And then the GDPS will be worked and verified its algorithms and performance using *in-situ* validation data.

3.RESULT

Before the atmospheric correction, GDPS can distinguish the land region by the geometry information of scene header and the cloud region by the threshold cutting of L_{TOA}. We can inspect the result for verification of land masking and cloud masking result.

The result of atmospheric correction algorithms (GDPS has two candidates for atmospheric correction algorithm, SSMM[4] and SGCA[3].) is the water leaving radiance (L_W). This value has to be placed in the expected range. And the normalized water leaving radiance(nL_W) will be calculated from BRDF correction algorithm and the remote sensing reflectance(Rrs) and Chl-a can be derived from it. All result like L_W, nL_W, Rrs, Chl-a can be compared with in-situ data by statistical analysis and scatter gram, etc.

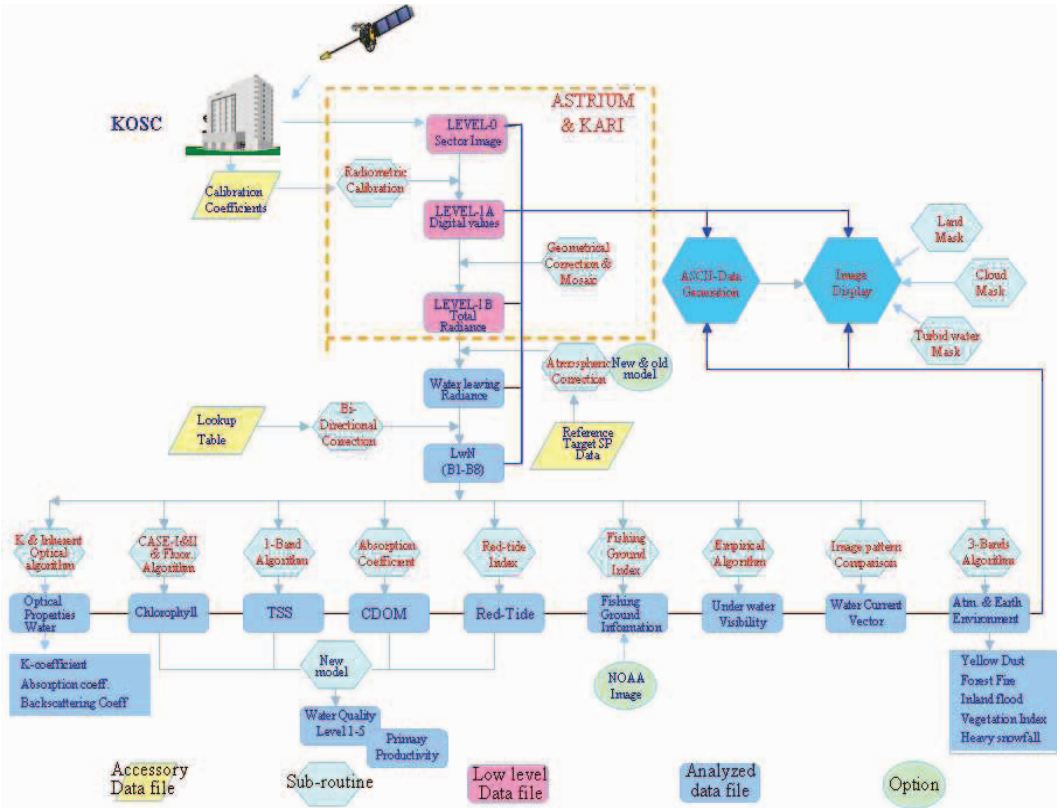

Fig 1. GDPS data processing flow (a red-dot box region = pre-processing part)

4. CONCLUSION

For the verification of GDPS algorithms (especially atmospheric correction algorithm and bidirectional functional correction), we can evaluate the preliminary result of GOCI. The statistical analysis and *in-situ* data comparison will be performed.

5. REFERENCES

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