

# Tidal Solution along Topex/Poseidon Track Near Prigi Tidal Station

Abdul BASITH, Indonesia

**Keywords:** Tidal harmonic analysis, aliasing, four tidal constituents, Topex/Poseidon

## SUMMARY

There are at least six tidal stations, which is crossed by Topex/Poseidon (T/P) tracks. One of which is Prigi tidal station crossed T/P track number 127. This research is intended to compare tidal solutions of four main tidal constituents namely, M2, S2, O1 and K1 from track 127 T/P time series with those from the nearest tide gauge data of Prigi tidal station.

Five years of T/P data spanning from 1994 to 1999 are used for tidal harmonic solution as well as the same spanning data of Prigi tidal station. T/P data are processed to produce Sea Surface Heights (SSH) with applying standard corrections. For tidal study, SSH have to be reduced to geophysical surface (for this case, mean sea surface) to produce Residual Sea Surface (RSS). Inverse barometric and other tidal corrections are also applied. RSS must be sampled at normal points to produce time series of T/P tidal data with 237.975 hours time interval. Due to large time interval, aliasing concept is applied during performing of T/P tidal data. Harmonic analysis of Prigi tidal data is performed in such conventional manners without applying aliasing concept to produce four main tidal constituents. The results of these two data are then compared and analyzed.

As the results, amplitude errors from T/P data are minimum relatively compared with tide gauge data. Amplitude error of M2 is (3.7%), S2 (4.72%), O1 (9.98%) and K1 (17.54%). Meanwhile, phase of those constituents resulted from this analysis varies in magnitude and sign which is probably related to aliasing problem. Nevertheless, the characteristic of tide resulted from both data is the same.

## **BIOGRAPHICAL NOTES**

|                |                                 |
|----------------|---------------------------------|
| Name           | Abdul Basith, ST, M. Si         |
| Sex            | Male                            |
| Place of birth | Demak (Central Java, Indonesia) |
| Date of birth  | December, 27 <sup>th</sup> 1971 |
| Nationality    | Indonesian                      |

## **CONTACTS**

Abdul Basith, ST, M. Si  
Lecturer at Department of Geodesy Engineering  
Dept. of Geodesy Engineering, Faculty of Engineering,  
Gadjah Mada University  
Jln. Grafika No. 2  
Yogyakarta  
INDONESIA, 55281  
Tel. + 62 274 520226  
Fax + 62-274 520226  
Email: geodugm@idola.net.id

Private address:  
Rejodani II RT 02 RW 03  
Sariharjo, Ngaglik  
Sleman, Yogyakarta  
Indonesia, 55581  
Cell phone: + 62 8157941196  
Email: abd\_basith@hotmail.com