



*International Civil Aviation Organization*

**FOURTEENTH MEETING OF THE ASIA/PACIFIC  
METEOROLOGICAL INFORMATION EXCHANGE WORKING GROUP  
(MET/IE WG/14)**

Bangkok, Thailand, 7 – 9 March 2016

**Agenda Item 5: Quality control, monitoring and management of meteorological information exchange**

**WEB-BASED PERFORMANCE INDICES ANALYSER**

(Presented by Thailand)

**SUMMARY**

This paper presents a new way to manipulate OPMET monitored data using the web-based Performance Indices Analyser and briefly explains methodology used to calculate three indices: availability, compliance, and regularity.

**1. INTRODUCTION**

1.1 Performance Indices (PIs) indicate RODBs' performance of collecting OPMET data and are used in the ASIA/PAC OPMET monitoring activity which is conducted annually in January.

1.2 The thirteenth meeting of the Asia/Pacific Regional OPMET Bulletin Exchange Working Group (ROBEX WG/13) held in Seoul, Republic of Korea recommended that the presentation of OPMET monitoring data and results could be harmonised in order to improve comparability and facilitate correct interpretation of the results.

1.3 Thus, RODB Bangkok initiated a development of web application for analysing OPMET data called OPMET Performance Indices Analyser (PIA). It provides more convenient way for monitoring and manipulating data.

**2. PURPOSE OF THE WEB APPLICATION**

2.1 To harmonize the results of the OPMET monitoring data among RODBs in order to improve comparability and consistency.

2.2 To improve correctness of interpretation of data, particularly the regularity index since a threshold can be calculated from data of a longer period rather than one month therefore the threshold will be more reasonable and practical.

2.3 To facilitate RODBs with a new way of submitting their OPMET data and simply create their own reports if needed. This would be helpful to notice anything unusual sooner as they can easily view the indices results on the web page.

### 3. METHODOLOGY

#### Reference and conditions

3.1 The expected number of received reports is based on Table A (ROBEX Collection and Dissemination of METAR Bulletins) and Table B (ROBEX Collection and Dissemination of Long TAF Bulletins) in Appendix B to the ROBEX Handbook.

3.2 The list of AOP aerodromes is based on Table C (ROBEX Exchange of METAR and TAF compared with ASIA/PAC FASID Table MET 1A) in Appendix C to the ROBEX Handbook.

3.3 All indices including availability, compliance, and regularity are calculated individually for each aerodrome. The system requires the OPMET data of the same day in each uploaded file in order to work correctly.

#### Calculation

3.4 The calculation of those indices is described in detail in Appendix H to the ROBEX Handbook. This paper concisely explains how each index is measured.

##### 3.4.1 *Availability*

The availability index is measured on a daily basis during the monitoring period. The index can be a number between 0 and 1. An aerodrome is considered available and counted as 1 when there is at least one non-NIL report is received from the aerodrome during the 24-hour period; otherwise it is counted as 0.

The index is calculated by the following:

$$I_{\text{availability}} = \frac{\text{number of aerodromes for which no more than one non-NIL data type are received}}{\text{number of required aerodromes}}$$

##### 3.4.2 *Compliance*

The compliance index is determined by the number of reports received including retard bulletins and the number of reports expected to receive from particular aerodrome.

The index is determined by:

$$I_{\text{compliance}} = \frac{\text{number of reports received}}{\text{number of reports expected to receive}}$$

##### 3.4.3 *Regularity*

The regularity index indicates the consistency in the number of reports provided by an available aerodrome. The calculation involves statistical methods including mean and standard deviation.

Before calculating the regularity index, we need to determine the threshold value- the number of report count which is considered regular.

The threshold value can be measured by:

$$threshold = \mu - \sigma$$

Where ‘μ’ is the mean of the daily report count of particular data type for each aerodrome during a monitoring period and ‘σ’ is the standard deviation of those data.

Once we have the threshold value, we can calculate the regularity index by:

$$I_{regularity} = \frac{\text{number of aerodromes for which the number of reports equals or exceeds the threshold value}}{\text{number of required aerodromes}}$$

#### 4. SCREENSHOTS

4.1 The upload page allows user to upload OPMET files. Each file must contain the OPMET messages of the same day.

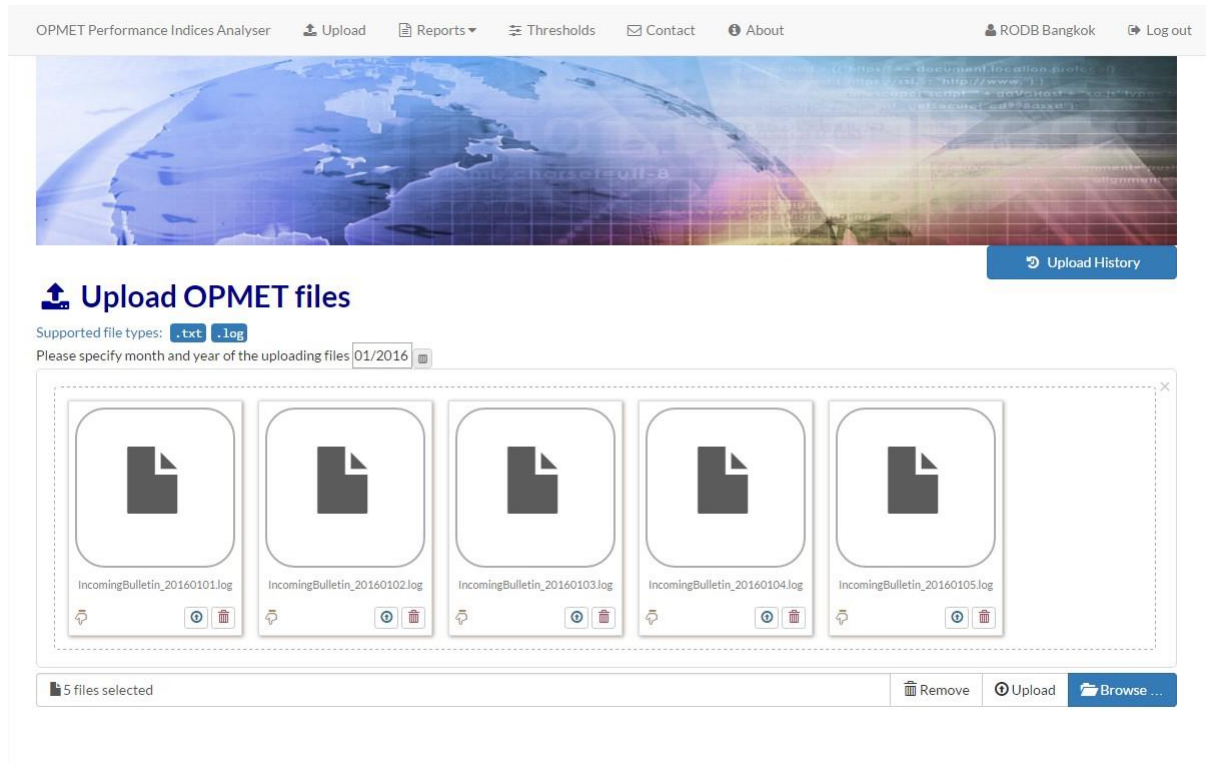


Figure 1: The Upload page

4.2 Before generating any reports, the threshold has to be created first because it will be used when calculating the Regularity index.

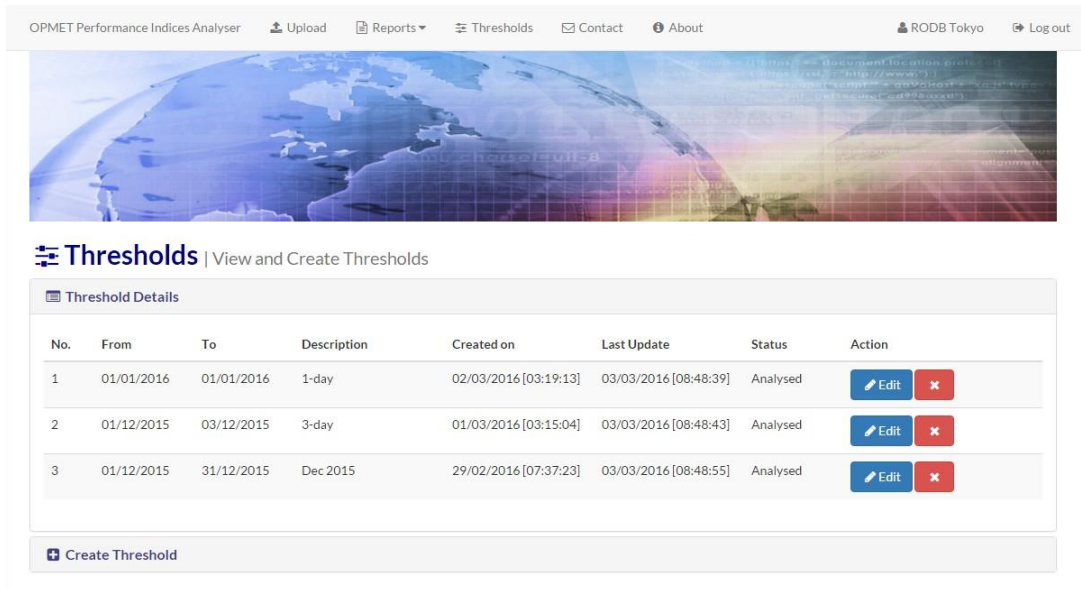


Figure 2: The Thresholds page

4.3 When logged in as an RODB and once created a report, the Report Detail page demonstrates the value of all indices based on aerodrome. User can search for a specific aerodrome or bulletin and can also sort out the data by clicking on any column header.

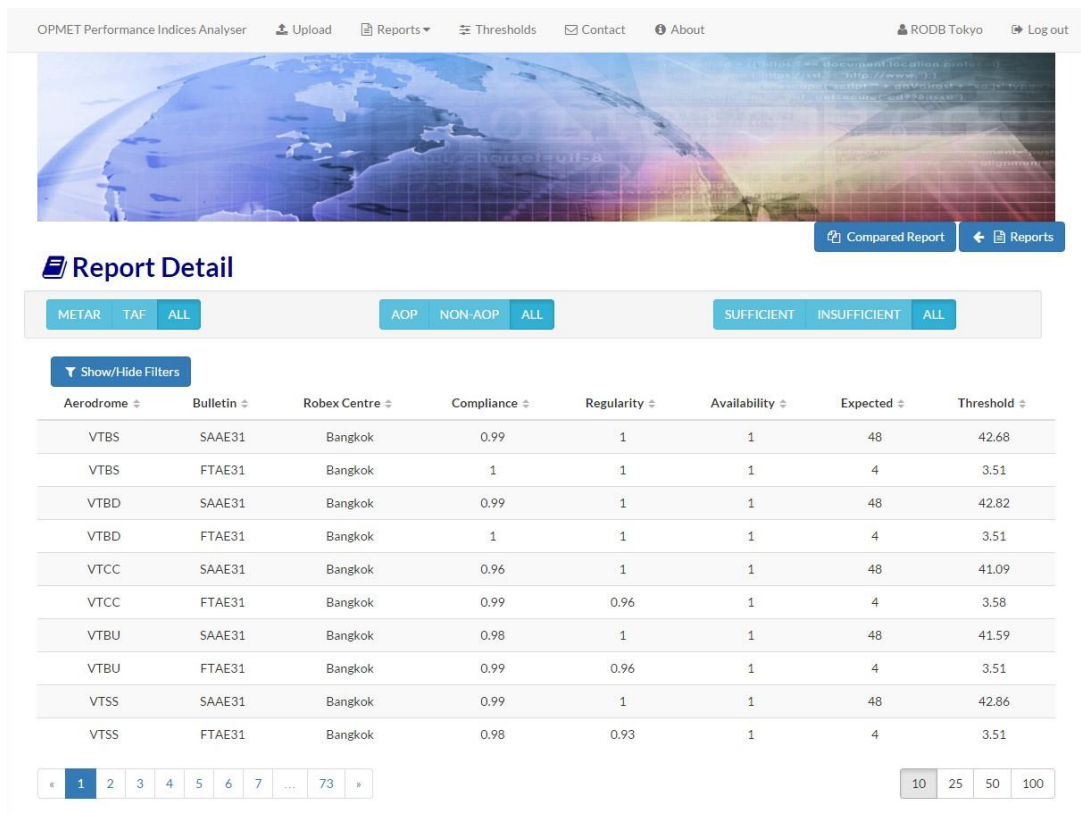


Figure 3: The Report Detail page shows the data from all RODBs for each aerodrome

4.4 The Public Report shows all indices of each RODBs for comparison. This report is generated by the Administrator and can be viewed by all RODBs.

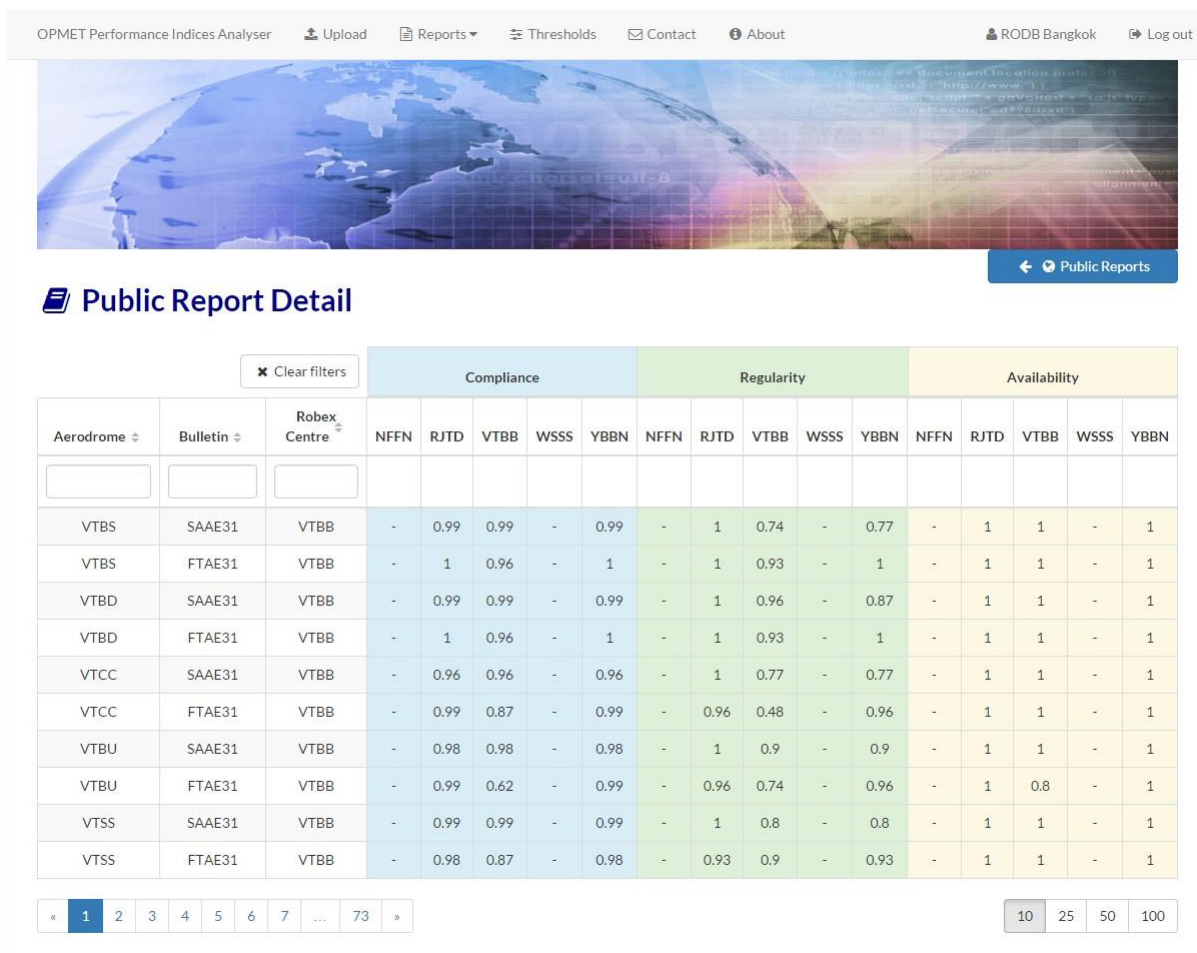


Figure 4: The Public Report Detail page indicates the results for comparison

**5. ACTION REQUIRED BY THE MEETING**

5.1 The meeting is invited to note the information contained in this paper

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