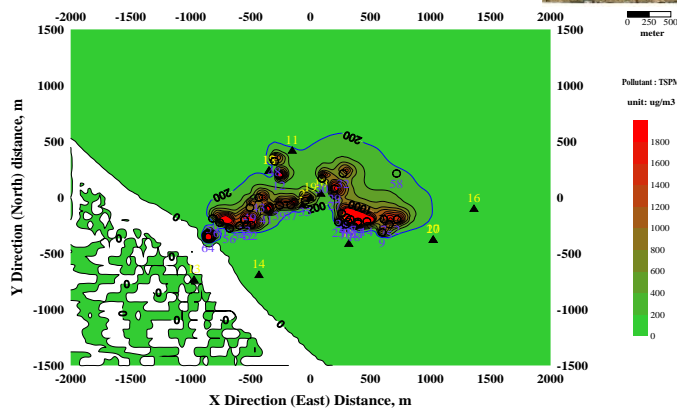
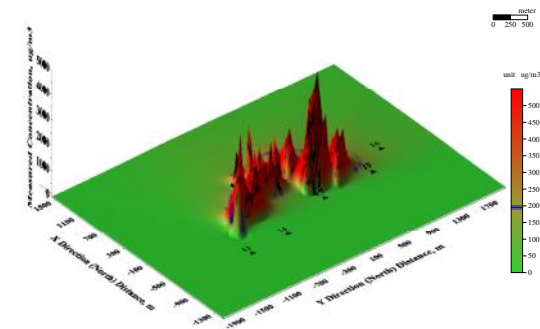




Assessment and Monitoring of Environmental Compliance by Industries



Dr. R. Sivacoumar



CSIR - National Environmental Engineering
Research Institute

Stone Crushing Industry

- Stone crushers are small scale industries with low capital investment (varying between Rs. 5 to 10 lakhs)
- Stone crushing in India is basically a labor intensive operation where the loading of stone into the crusher, conveying the product materials from separating screens, loading and unloading operations are performed manually
- The production capacity of stone crushers varies from 30 - 300 MT/day
- The study area at Trisoolam is located at a distance of 20 km to the southwest of Chennai

Dr. R. Sivacoumar

Air Pollution from Stone Crushing Industry



A View of the Stone Quarry

Dr. R. Sivacoumar

Air Pollution from Stone Crushing Industry



Transportation of Quarried Material to Stone Crushers

Dr. R. Sivacoumar

Air Pollution from Stone Crushing Industry



Transportation of Quarried Material to Stone Crushers

Dr. R. Sivacoumar

Air Pollution from Stone Crushing Industry



A View of Stone Crusher in Operation

Dr. R. Sivacoumar

Air Pollution from Stone Crushing Industry



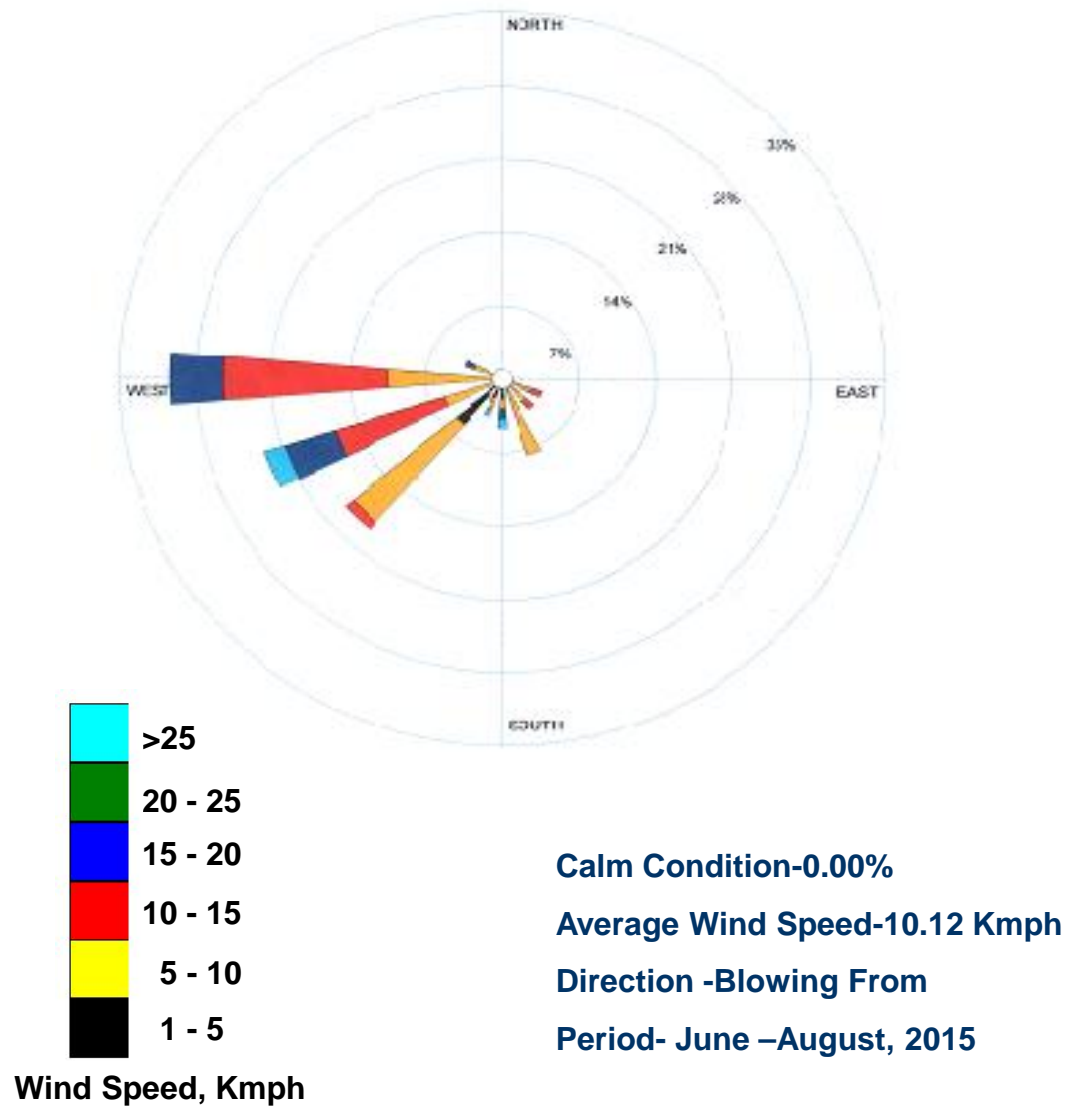
A View of Stone Crusher in Operation

Dr. R. Sivacoumar

Air Pollution from Stone Crushing Industry



A Close View of Stone Crusher



Windrose Pattern at Stone Crushing Units, Trisoolam

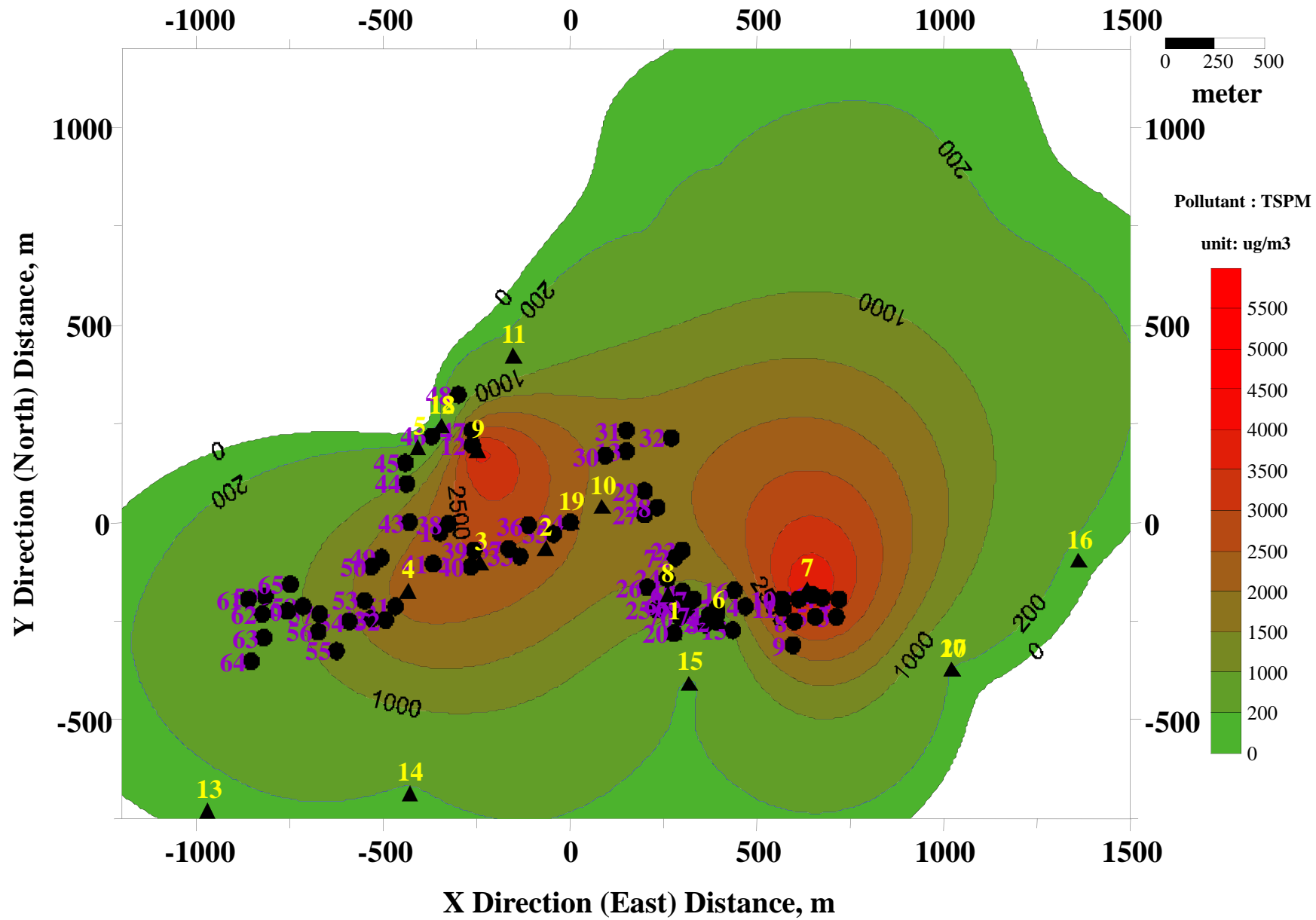


Fig. Isopleths showing measured concentration

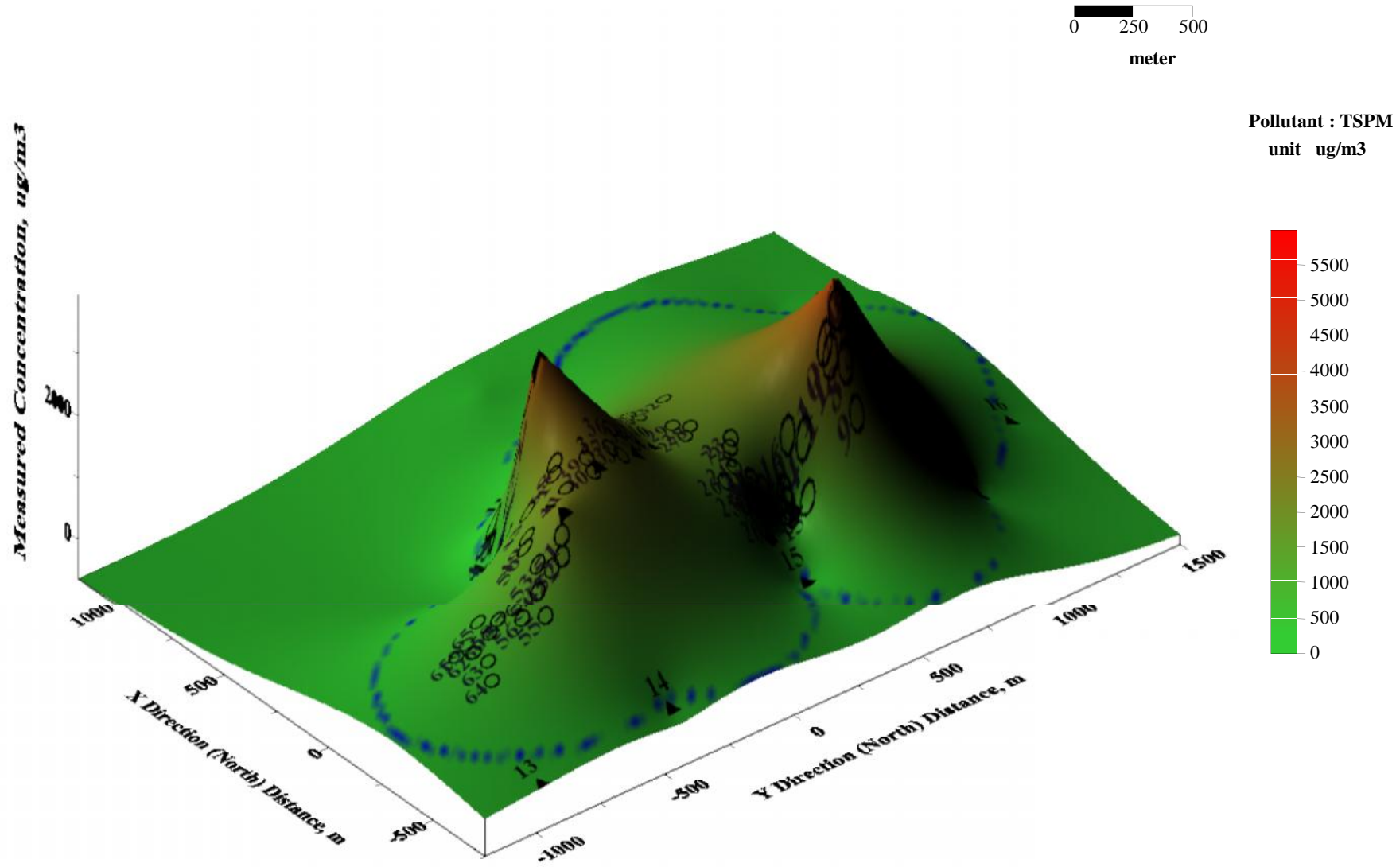
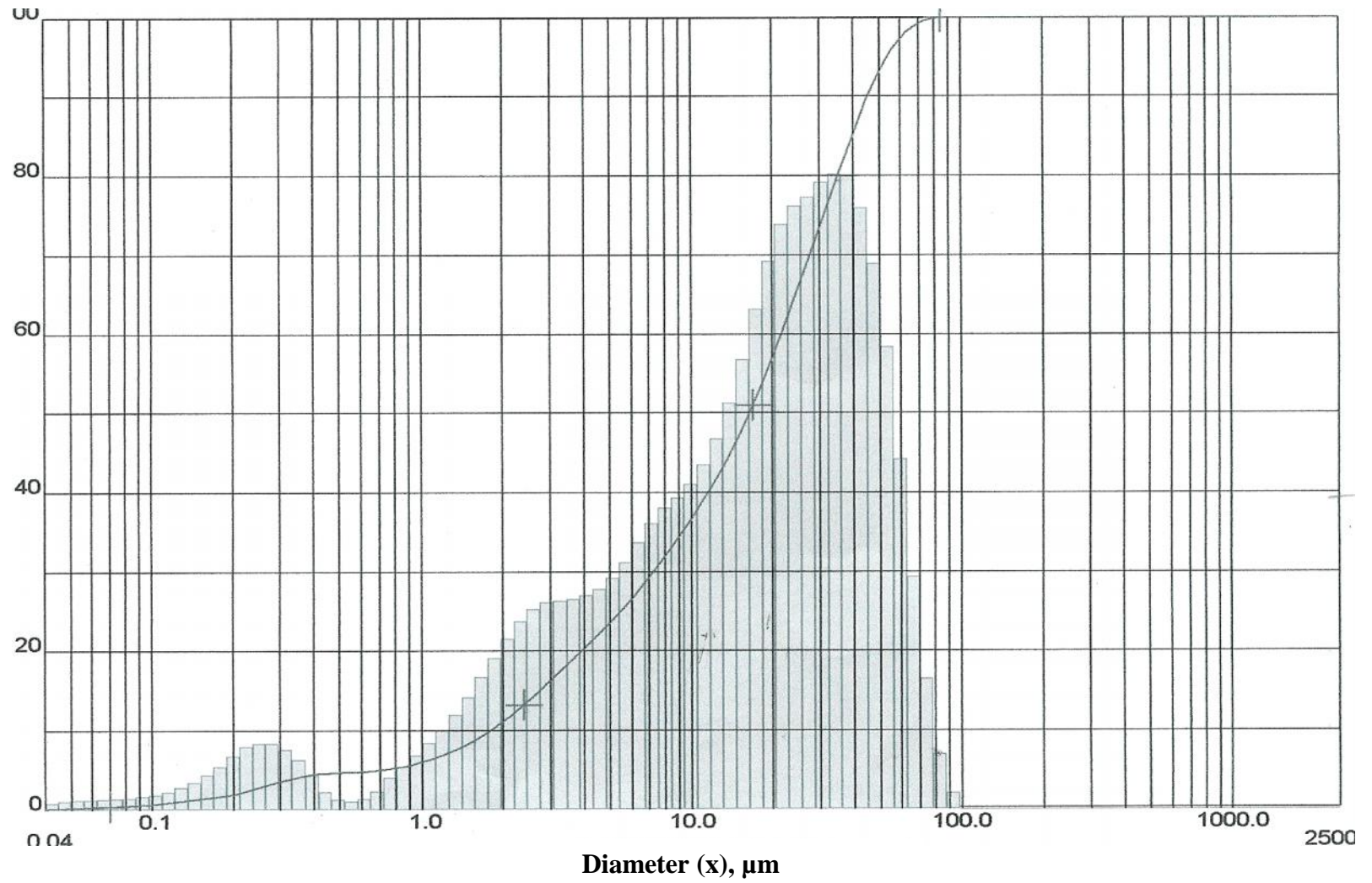
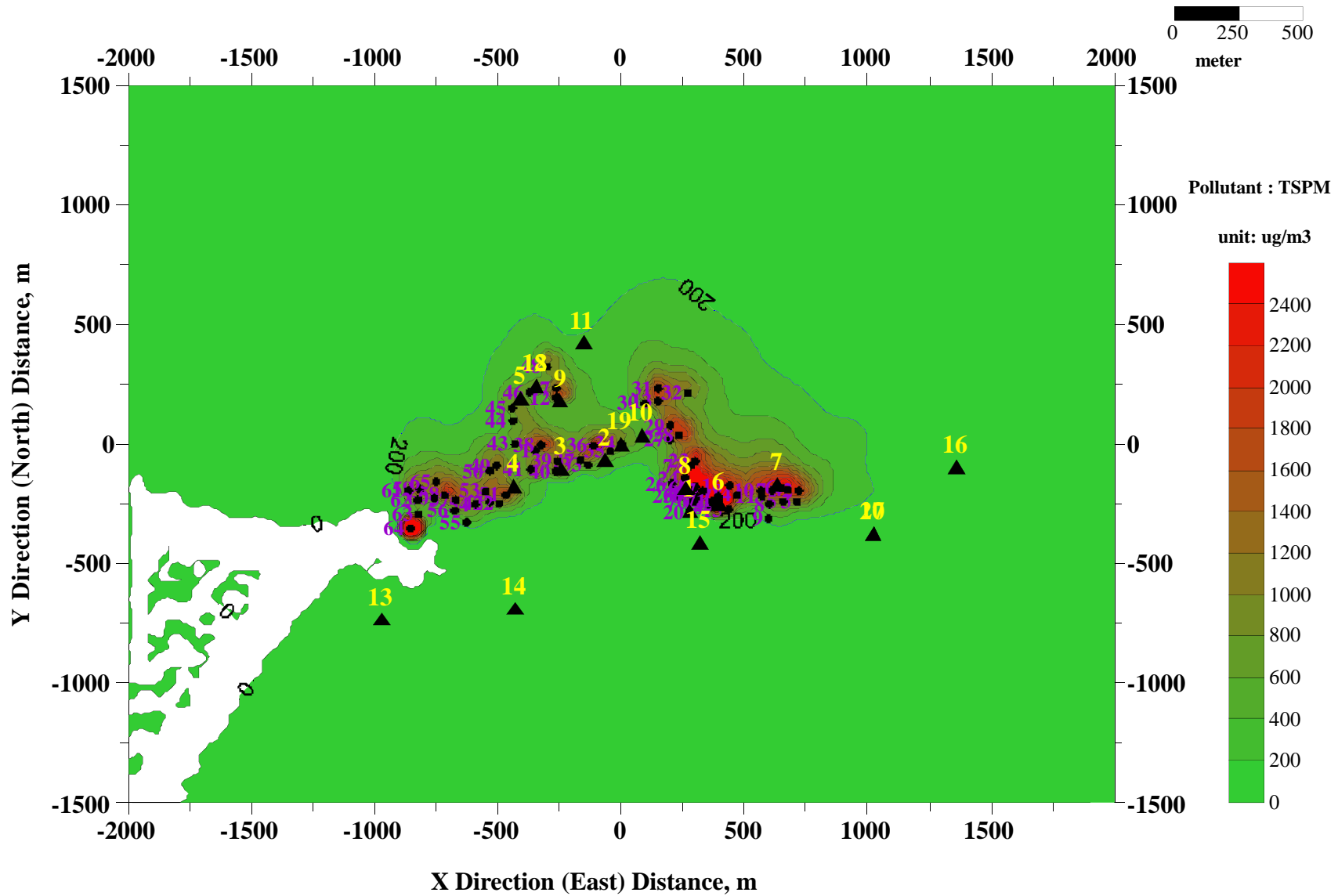


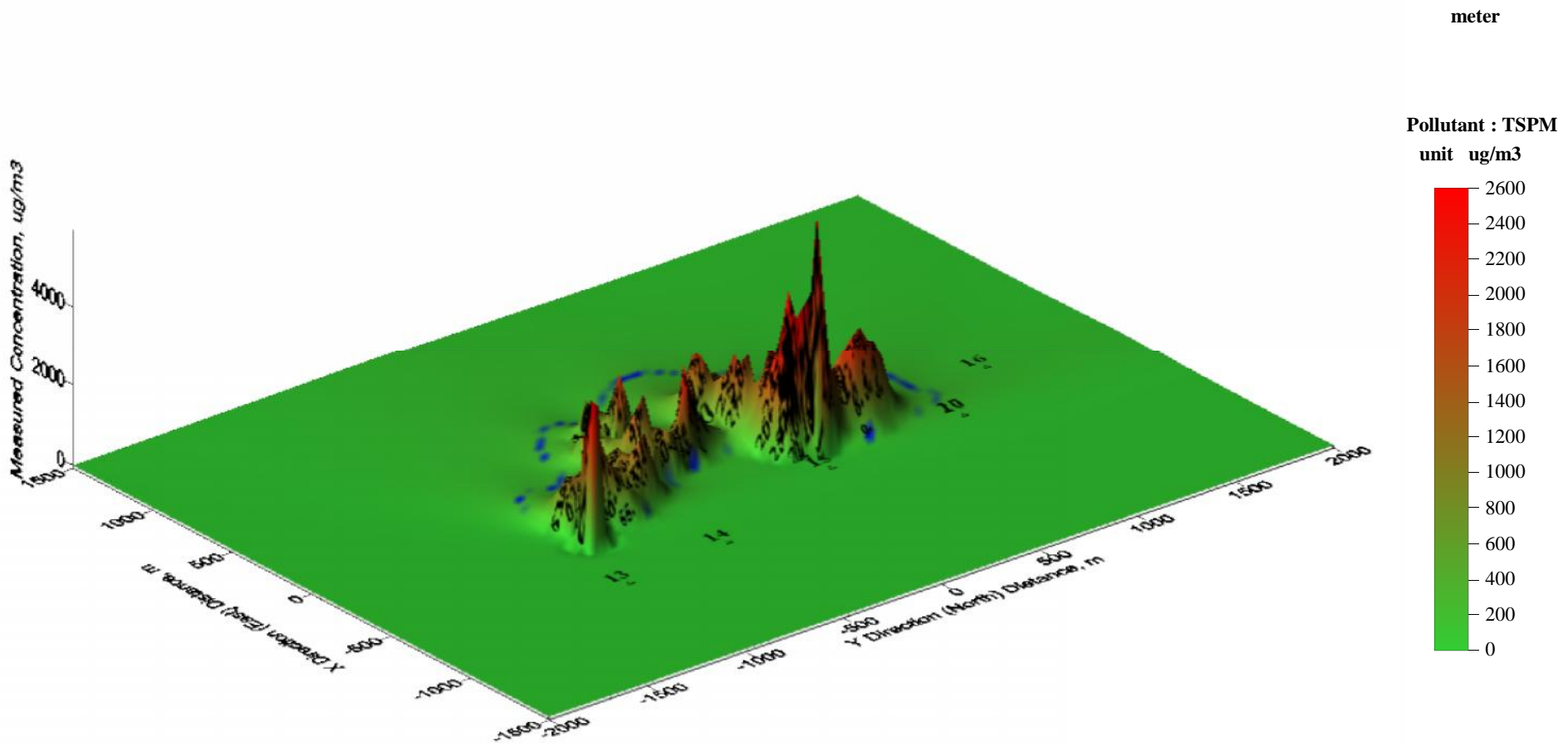
Fig. Surfer showing measured concentration



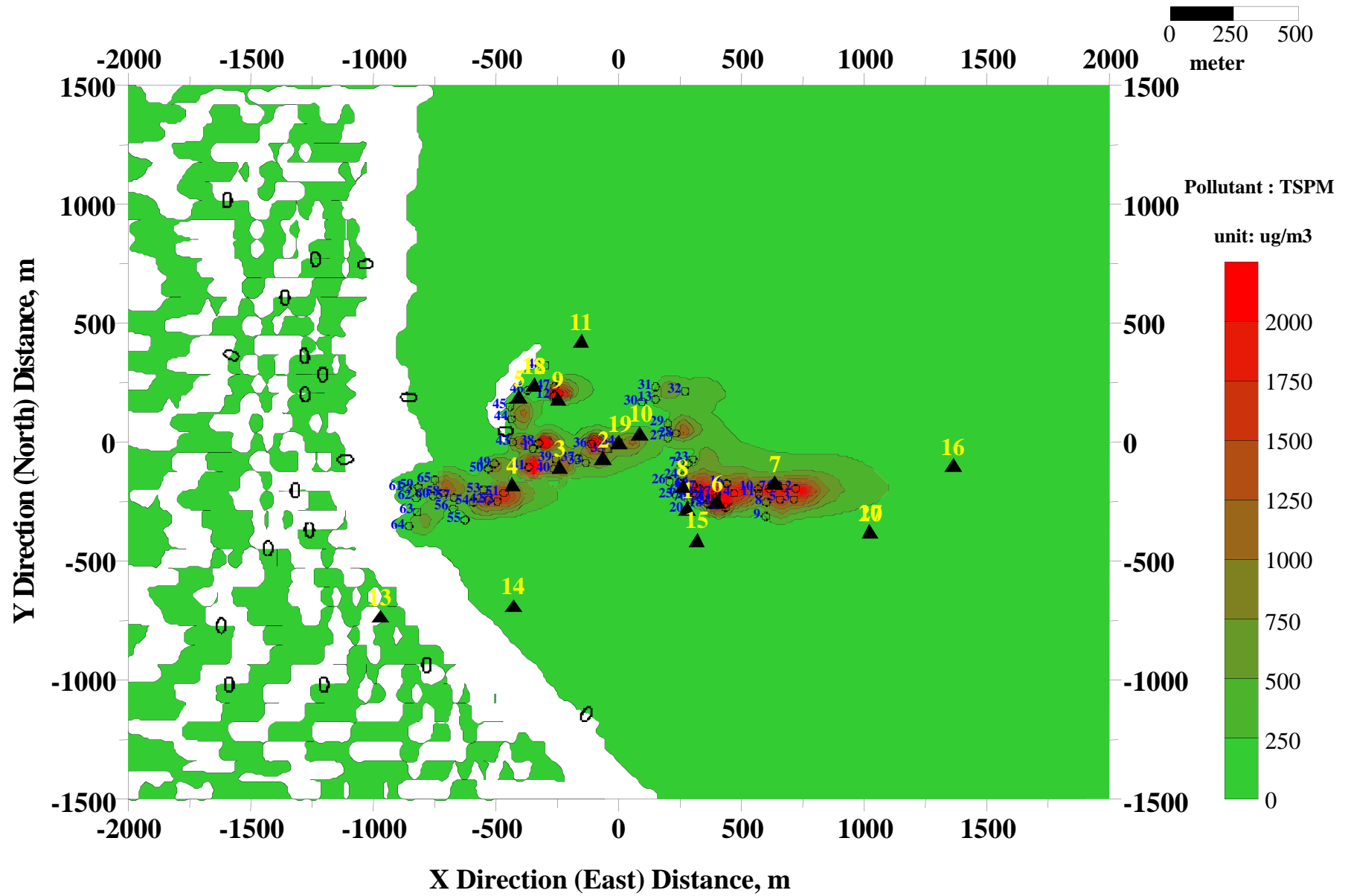
Particle Size Distribution



Isopleths showing AERMOD predicted concentration



Surfer showing AERMOD Predicted concentration



Isopleths showing ISCST3 predicted concentration

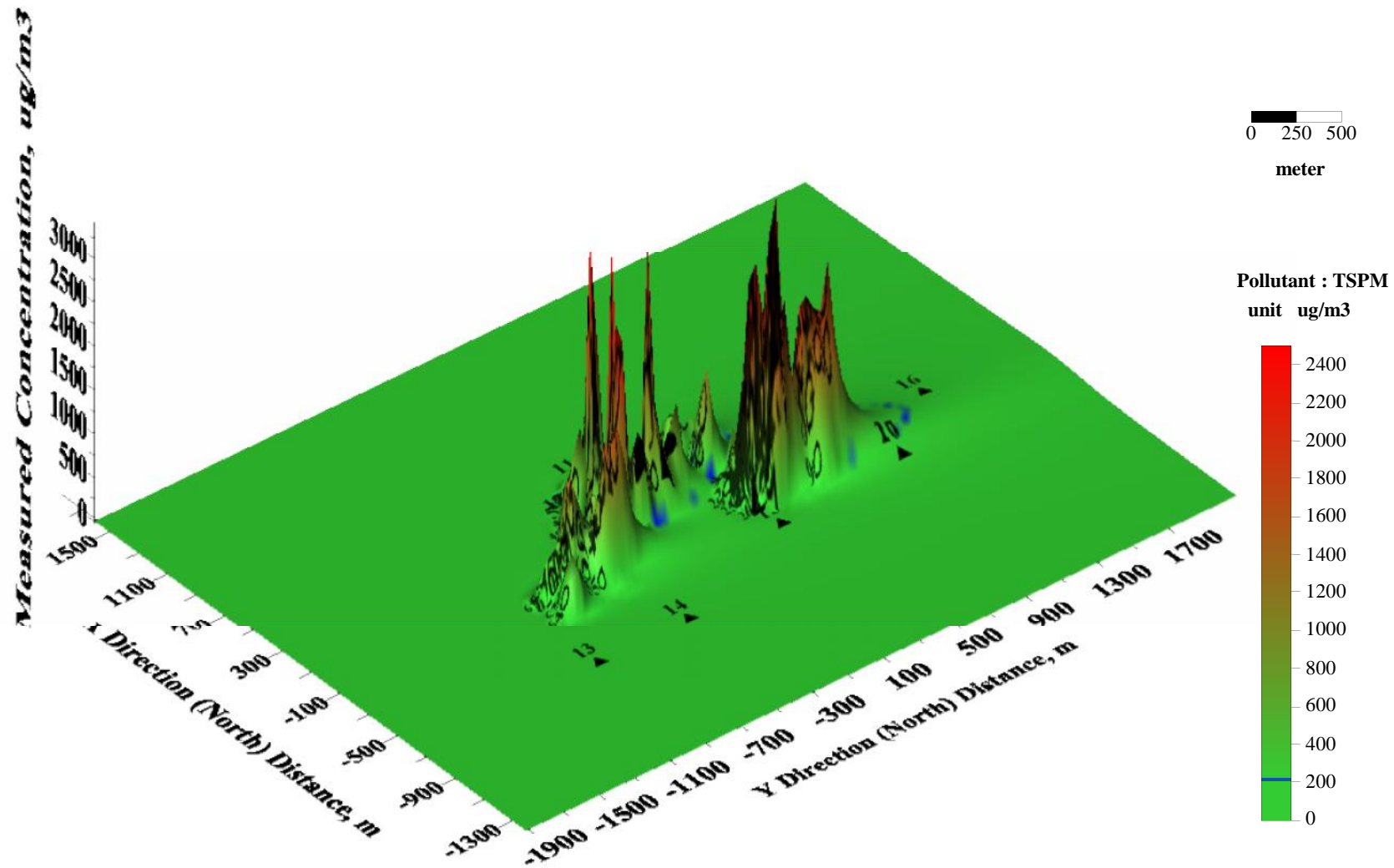
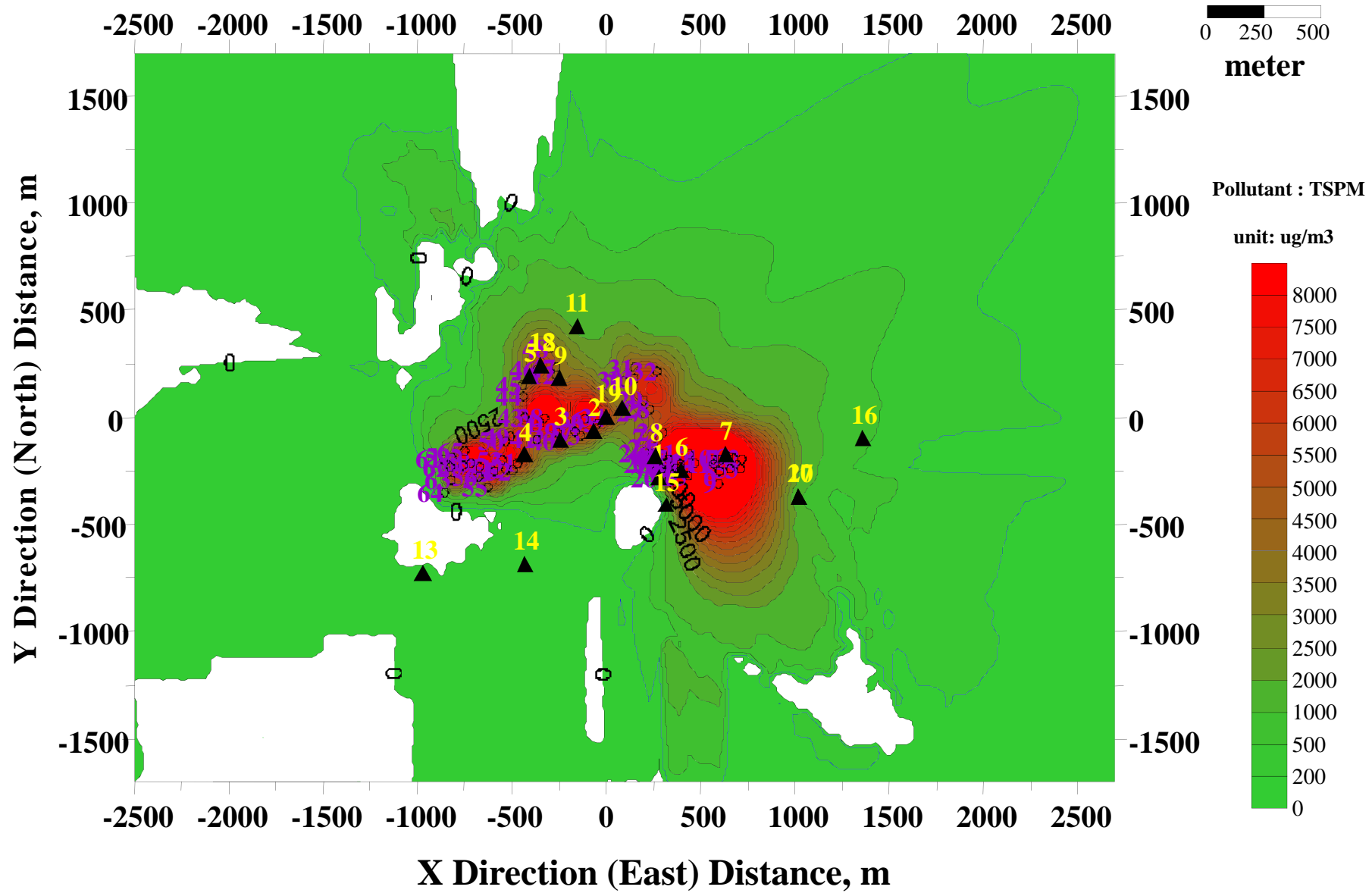
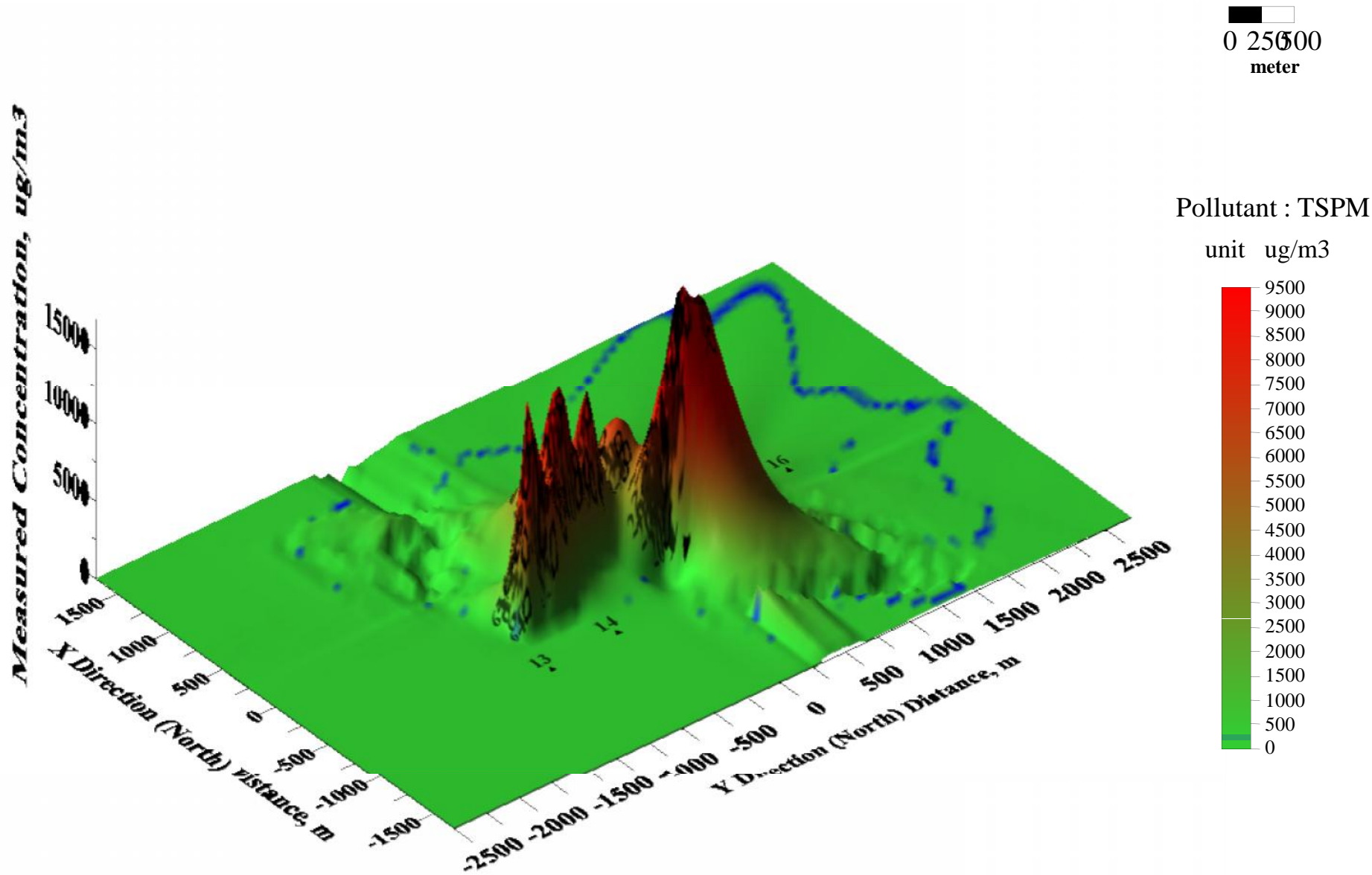


Fig. Surfer showing ISCST3 Predicted concentration



Isopleths showing FDM predicted concentration



Surfer showing FDM Predicted concentration

Impact Zone based on Monitoring and Models predicted concentration

MODEL	Maximum		Minimum		Average
	Dir.	Dist, m	Dir.	Dist, m	Dist, m
AERMOD	65	1255	15	35	679
ISCST3	110	1056	225	43	501
FDM	46	2650	235	53	1335
Measured	68	1350	230	211	784

Control Measures

The standards consist of two parts:

Implementation of following pollution control measures

- Dust containment cum suppression system for the equipment
- Construction of wind breaking walls
- Construction of metalled roads within the premises
- Regular cleaning and wetting of the ground within the premises
- Growing of a green belt along the periphery

Quantitative standard for the TSPM

- The suspended particulate matter measured between 3 - 10m from any process equipment of a stone crushing unit shall not exceed $600 \mu\text{g}/\text{m}^3$

Recommendations

- **NPC dust containment and dust suppression system should be provided**
- **Paving of roads should be adopted**
- **Fine powder should be collected at the ground
Conveyor chute should be provided at the
discharge points**
- **Drop height for the conveyor operations should
kept at the minimum**
- **The fine powder should be disposed off
periodically**
- **Covering of fine dust with tarpaulin during
storage and transport to final destination should
be practiced**

Thank you.

