

# Caspian Sea Level changes based on Satellite altimetry

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## Short Report

**Keywords:** The Caspian Sea, Sea level, Altimetry, Caspian Sea Level

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# Caspian Sea Level changes based on Satellite altimetry

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## Abstract

Today, despite the satellite altimetry, it is possible to determine the average sea level and determine the sea level change with high accuracy. In this research, data from 1992-2017 TOPEX / Poseidon, Jason1, OSTM and Jason3 altimeter satellites in the Caspian Sea have been used. The results show that every year the average of 75 mm of the Caspian Sea water level decreases and the downward trend.

**Keywords:** The Caspian Sea, Sea level, Altimetry, Caspian Sea Level

## Introduction

The history of satellite altimetry to determine the average sea level and geoid dates back to three decades ago [1]. Changes in the Caspian Sea, since it is not connected to open waters, have always been different from global changes in open waters, as it has witnessed major changes in its history [2]. For example, we can mention the sharp rise in water levels in the 1970s and its sharp decline in recent years, which continues. Rising water in the 1970s and the flooding of coastal areas and facilities created a crisis that was examined from different perspectives. Similarly, water shortages in recent years have caused another crisis in the region. As maritime trade in the region is severely threatened. Another case is the separation of Gorgan Bay from the Caspian Sea, which is very imminent as the process of water depletion continues. In the event of this event, an environmental crisis is predicted for the region that could severely affect the Gorgan region. Deep learning can also be help determine sea level [3-6].

In this research, data from 1992-2017 TOPEX / Poseidon, Jason1, OSTM and Jason3 altimeter satellites in the Caspian Sea have been used.

## Results

The output of the OSTM satellite from 2009 to 2017 is shown in Figure 1.

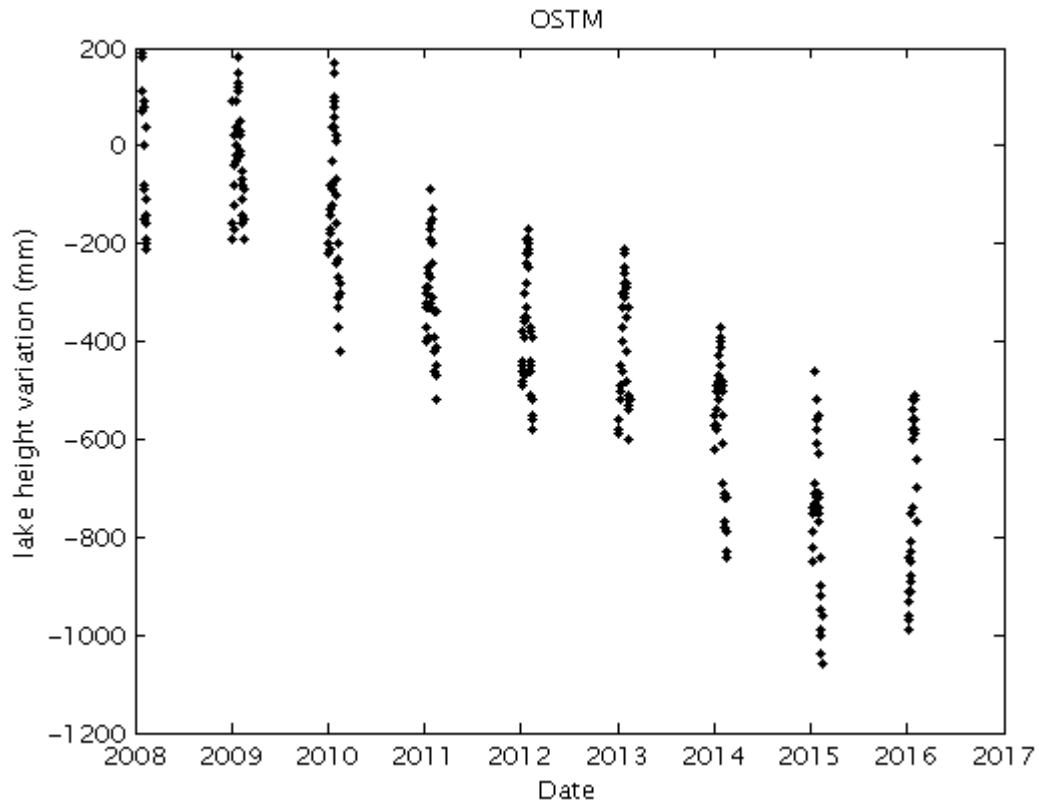


Figure 1 OSTM satellite output from 2009 to 2017

All altimeter satellite outputs are shown in Figure 2.

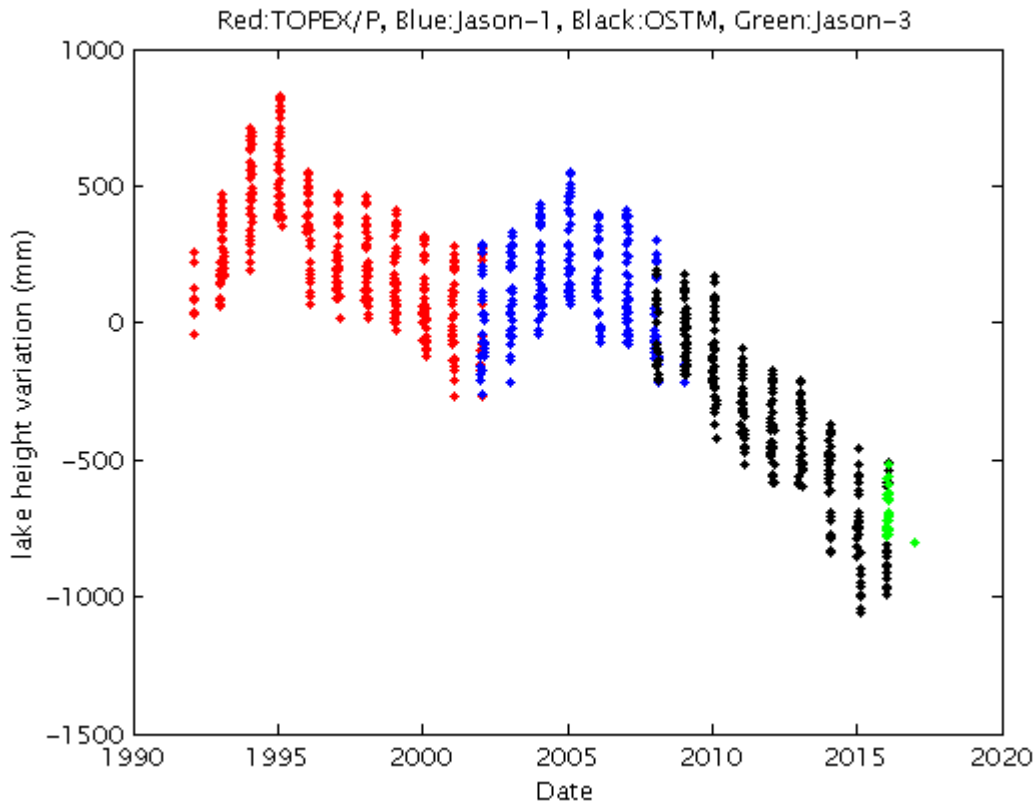


Figure 2: All output of altimeter satellites

Every year, the average 75 mm of the Caspian Sea water level decreases and the downward trend.

### Conclusion

In this research, data from 1992-2017 TOPEX / Poseidon, Jason1, OSTM and Jason3 altimeter satellites in the Caspian Sea have been used. The results show that every year the average of 75 mm of the Caspian Sea water level decreases and the downward trend.

**Competing interests:**

The authors declare no competing interests.

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# Figures

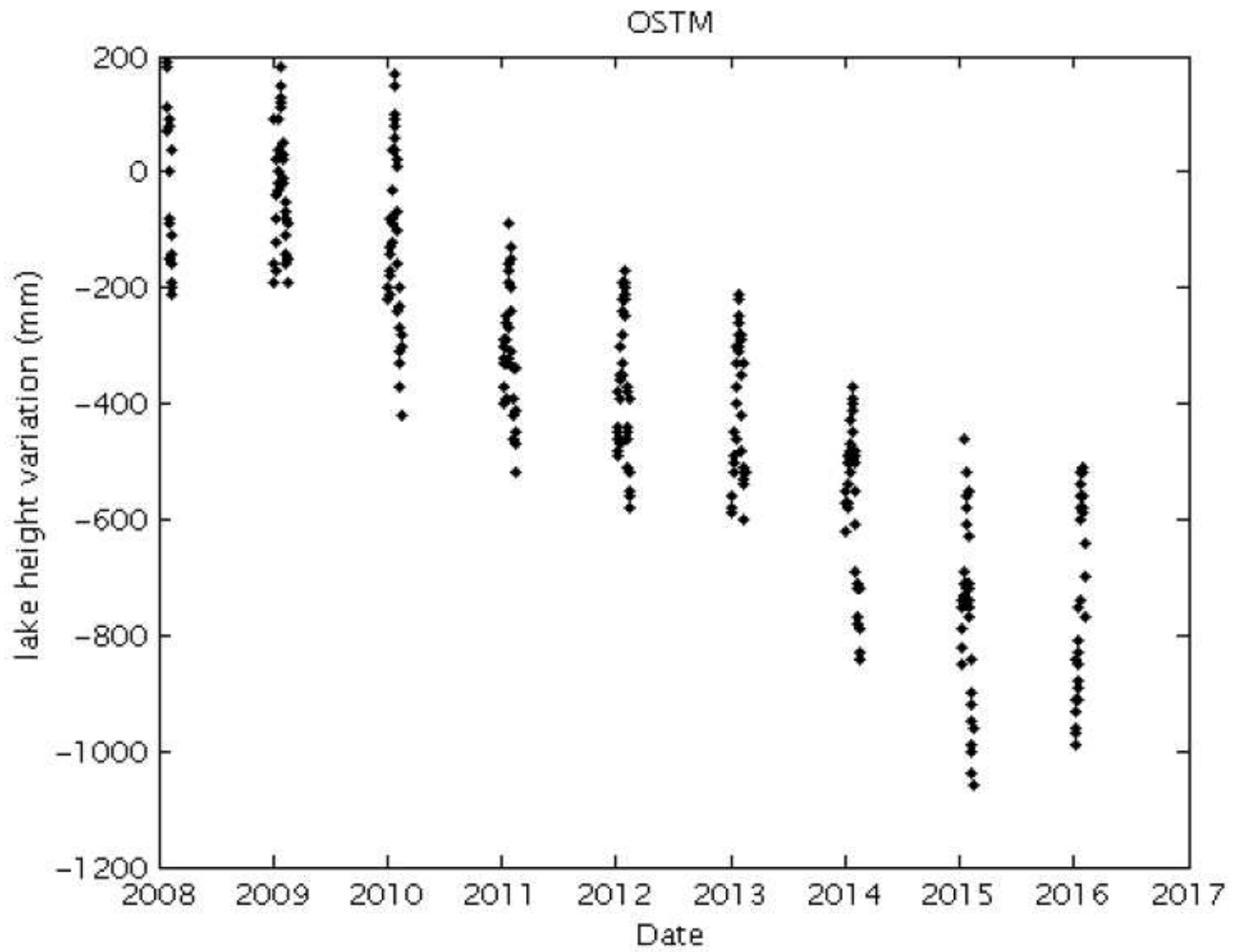


Figure 1

OSTM satellite output from 2009 to 2017

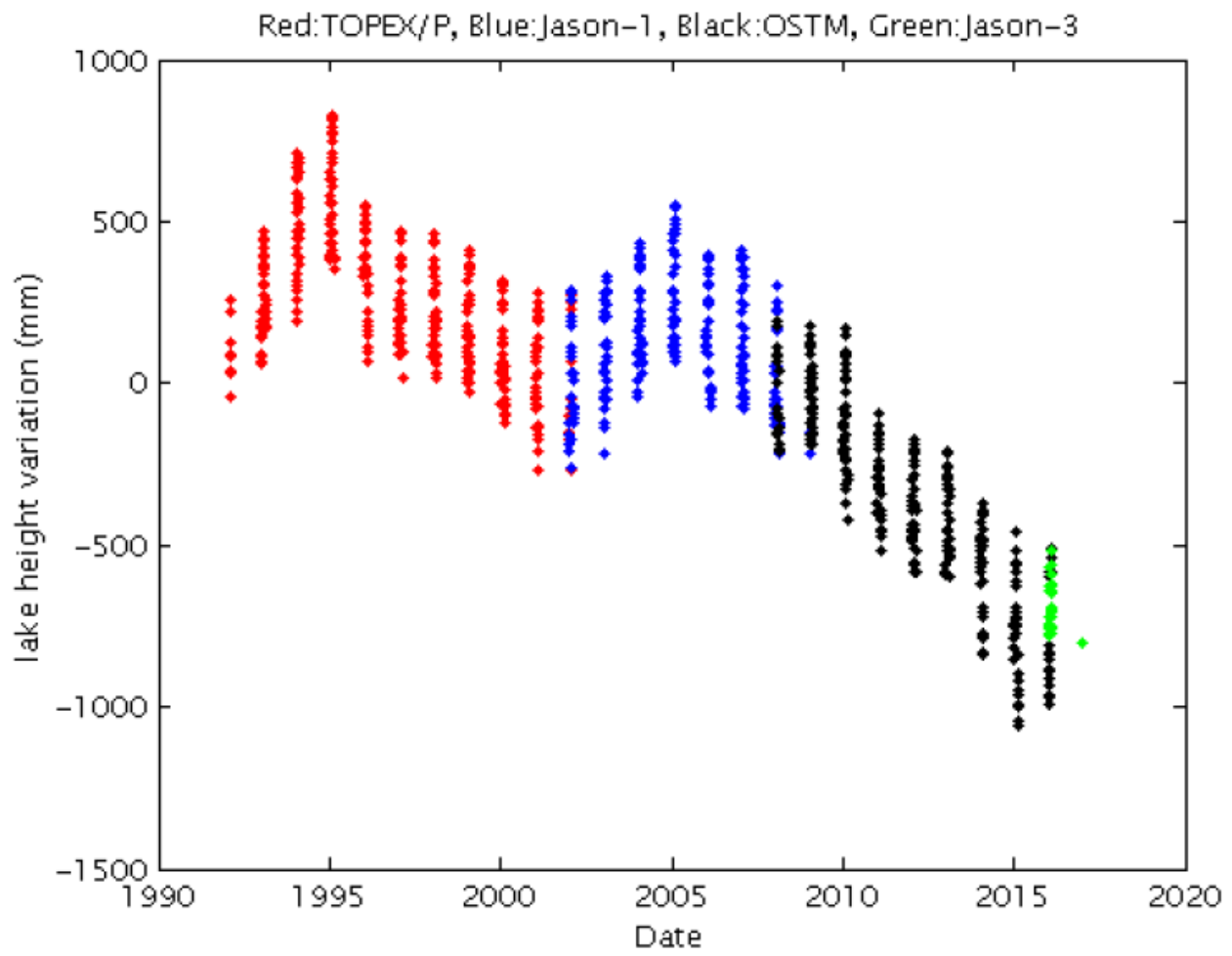


Figure 2

All output of altimeter satellites