The future of the Caspian. Research projects and studies





Signature of the Climate Change in the South Caspian Basin and Coastal Area

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Outline

Climate of the Caspian Sea and Climate

change forcing

- Data and methods
- Marine Weather Hazards

Future work

Climate of South Caspian Sea



Topography

Precipitation

Precipitation



Climate Change Forcing





Monitoring

Statistical Analysis

Synoptic Analysis

Numerical Simulation

Data

- Observation Data
 - Synoptic stations
 - Buoy
- Reanalysis Data
 - ECMWF
 - NCEP/NCAR
- Analysis Data
 - GFS
 - FNI
- Satellite Data
 - AVHRR (SST)
 - QuikSCAt, Blended sea winds,
- Radar Data

Synoptic and Radar Network











Marine-Weather Hazards in south of the Caspian Sea

- Floods
- Wind storms
- Waterspout
- Dust
- Heavy Snow
- Fog
- Foehn wind

water spout



Waterspout in the Caspian Sea





Mazandaran province

Guilan province

Dust storm in the Southern coast of the Caspian Sea





(Ghafarian et al, 2015)





20th of September 2014

Heavy Snow







- Ioss of life
- Damaging buildings
- Cutting power and Transmission lines
- Destroying both urban and rural roads,
- Creating infrastructure problems, and
- damaging crops

Heavy Snow (Lake Effect Snow)



Atmospheric Condition for LES- 2014-02-01



SST and T850 hPa

RH, SLP and surface wind field

(Ghafarian et al, 2018)

Sea Surface Temperature Anomaly



2001/10/01 154 milimeter Precipitation

2014/02/01 26 Centimeter Snow





Future Work

- Development of the monitoring network
- □Sharing data
- Enhance Numerical model
- Establishment Early Warning system

Thanks for your attention