The Structure of Summertime Atmospheric Circulation over Southwest Asia

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Southwest Asia is a transient region with respect to the large scale atmospheric circulation patterns. This region is a location for interaction between extra-tropical and tropical systems during the year. It is also the region of the formation and settling of subtropical pressure systems.

The atmospheric research over Southwest Asia for the warm period was done infrequently, at irregular intervals and in scattered locations. Thus, the summer atmospheric circulation components over Southwest Asia are less known.

The goal of this research is to introduce the summer atmospheric circulation components over Southwest Asia.
Summer Atmospheric Circulation Components over Southwest Asia (SWA)

A Climatological View
Summer Atmospheric Circulation Components over Southwest Asia (SWA)

Subtropical Jetstream
Uwind–Geopotential Height and Vorticity 200hPa

15–20 May

[Map showing geopotential height and vorticity at 200hPa]
Iran Anticyclone

Iran Anticyclone - Vorticity 200hPa
- Oct
- Sep
- Aug
- Jul
- Jun
- May
- Apr

Iran Anticyclone Position - 200hPa
- April
- May
- June
- July
- August
- September
- October
Anticyclone in upper troposphere

Uwind–Geopotential Height and Vorticity 200hPa

[Map showing geopotential height and vorticity]
Arabian Anticyclone

Cross Section - Vorticity [JJA] - [Lat: 20°-30°N]
April-10 Days

Arabian Anticyclone Position—500hPa

-April
April to May-10 Days

Arabian Anticyclone Position-500hPa

- May
- April
April to June-10 days

Arabian Anticyclone Position—500hPa

- June
- May
- April
April to July-10 Days

Arabian Anticyclone Position-500hPa

- July
- June
- May
- April
April to August-10 Days

Arabian Anticyclone Position-500hPa

- August
- July
- June
- May
- April
April to September-10 Days

Arabian Anticyclone Position - 500hPa

- September
- August
- July
- June
- May
- April
April to October-10 Days

Arabian Anticyclone Position–500hPa

- October
- September
- August
- July
- June
- May
- April
Iran Anticyclone

Cross Section—Vorticity [JJA]—[Lat:30–35N]
Turkmenistan Anticyclone

Cross Section - Vorticity [JJA] - [Lat: 37.5N]
Low pressures and Troughs
Low Pressures and Troughs
Conclusion

- Summer circulation over SWA shows a Quasi-Stationary structure.
- Various anticyclones with different nature can be find over SWA.
- Composition of the high and low pressure centers with different intensities in different levels cause the complex atmospheric conditions over SWA in summer.
Thank you