

Atmospheric Research from past to future- Personal Perspective

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Abstract

I will describe two of our inventions that had global spread and then discuss some major questions related to Mediterranean climate.

Since our pioneering suggestion of the Factor Separation (FS) Methodology in the atmosphere (Stein and Alpert, 1993), many different FS applications were performed, as summarized by Alpert and Sholokhman (2011). Several climate and weather FS applications with focus on the central role of synergies or interactions among different factors as first revealed by this methodology are pointed out. Evidence for the role of climate synergies from the leaf cell up to global scale will be shown (Alpert et al., 2006). Lessons from recent 20 years FS studies in weather & climate will be highlighted.

Another global problem to be discussed is the global dimming and our suggestion that the increased urbanization particularly over world megacities had the major contribution to the solar dimming.

The important of novel monitoring systems in solving some of the current and future major atmospheric challenges will be highlighted. For instance, the Commercial Microwave Links (CML) to monitor near-surface moisture in its different phases including rainfall, fog and air-moisture (Alpert et al., 2016) that we have suggested (Messer et al., 2006) is an example that spread just in one decade to many groups worldwide.

Another new monitoring approach for aerosols, i.e. the ceilometer data, will be shown as useful to study the recent dust storm from Syria and whether there is a potential new aerosol source in the E. Mediterranean from Syria-Iraq (Uzan et al., 2017).

A central issue in global warming is the recognized Mediterranean "hot spot" with its predicted drying and warming. How will this endanger the poor population of the E. Mediterranean and the Mid-East and cause of potential spread of unrest to other regions of the world?

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