REVIEW OF POLAR FACULAE : EFFECT ON SUNSPOT CYCLE, DYNAMO AND INTERPLANETARY FIELD

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Makarov and co-authors have established several relations (duration, intensity, peaks, secular evolution) between a polar faculae cycle and the following sunspot cycle: the latter repeats roughly the polar faculae cycle with a time shift of about half a cycle. Moreover those findings are confirmed by CaII-K bright spots and by the global magnetic regions, again preceding the sunspot cycle by about half a cycle. These relations (some expressed in approximate equations) imply adaptations for various dynamo theories: Babcock-Leighton, Choudhury et al., Dikpati et al., Callebaut and coworkers, etc. The theory of Callebaut allows the polar faculae and the sunspots to be generated by the same mechanism, the delay between them is attributed to the torsional oscillations which start at higher latitudes and evolve toward the equator, automatically implying a suitable time shift. The total number of polar faculae, somewhat representative for the solar interplanetary flux, does not stand in a simple relation to the Wolf number. In fact their number increased by a factor more than 3 during the last four cycles, while the Wolf number did not vary drastically. This may be attributed to the combination of 3 effects.