SWH trends and links to large scale teleconnection patterns in the Mediterranean Sea

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This study analyzes the SWH field in the Mediterranean Sea using a multidecadal simulations (1958-2001) carried out using the WAM (WAve Model) forced by the REMO-HIPOCAS wind fields. The simulations are validated against satellite altimeter data. Several mid-latitude patterns are linked to the SWH field in the Mediterranean. Considering the mean monthly SWH values, EA (Eastern Atlantic pattern) exerts the largest influence, while NAO and other patterns have a smaller but comparable effect. Severe SWH conditions have been characterized using the 95percentile of daily SWH maxima. NAO is important mainly for high SWH conditions in winter with significant correlation in December, January and March, but also EA, SCA (SCAndinavian) and EA-WR (Eastern Atlantic-Western Russia) play an important role. In general, both SWH high and mean values are modulated by several patterns, with an important variability in space and at monthly level so that no single pattern can be attributed a dominant role along the whole annual cycle and all the mentioned patterns are important for at least few months in the year. Significant trends of SWH are present only in sparse areas and suggest mostly a minor decrease of storm intensity, The statistics of extremes and high SWH values is substantially steady during the second half of the 20th century.