Space Weather impacts on Radar systems

Go to <https://www.radartutorial.eu> 🡪 set language to English

Read the following chapters:

* “Basics”, from “Historical overview” to “Electronic Warfare”. “Radar timing performance” and “The Radar Equation” are somewhat technical, so just quickly scan those.

During the reading of the text, try to answer the following questions. Some answers can be found in locations other than ”Basics” (Hints: use the keyword register and the alphabetic database of radars. You can also use Wikipedia 😊).

1. What frequency band(s) is are used for over the horizon radar? What is the principle behind it?
2. What kind of solar phenomenon might impact this type of radar and why?
3. What frequencies (roughly) are suitable for missile defense and why? What happens below and above these frequencies? (Hint: missiles travel through and above the ionosphere)
4. What effects do Radars that track satellites suffer from?
5. What does the frequency or wavelength of a Radar system tell you about its accuracy and range?
6. What is the main difference between a dipole antenna and a yagi antenna? Which of the two is more susceptible to Space Weather and which Solar phenomena can affect them?
7. What is a sidelobe and why is it important for Space Weather?
8. Can a car parking sensor (automotive radar) be impacted by Space Weather?
9. What type of Radar does a Patriot system use and is it sensitive to SWx and if so, how is it impacted?