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September 15, 2016

Higher Bands Will Pick Up this Fall, Data Suggest Smaller Solar Cycles Lie Ahead

Propagation guru Carl Luetzelschwab, K9LA, says that, while conditions on 12 and 10 meters will pick up as they always do in the fall, F_2 propagation on those bands will decline thereafter, with only sporadic E during the summer months as a possible saving grace. On the other hand, the lower bands -- 160, 80, and 40 meters -- should be good going forward, and 20 and 17 meters will be the mainstays of daylight HF propagation. Luetzelschwab offered these observations during an August 23 World Wide Radio Operators Foundation (WWROF)-sponsored webinar "Solar Topics -- Where We're Headed." He said data suggest that Solar Cycle 24, the current solar cycle, will bottom out in 2020, and he advised that radio amateurs may need to lower their expectations on the higher bands (and 6 meters) looking beyond that.

Carl Luetzelschwab, K9LA.

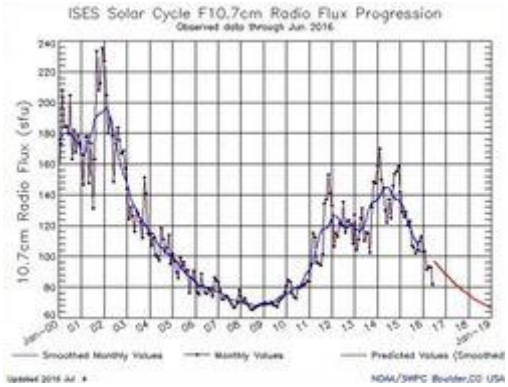
"I think the only conclusion we can make with some confidence is that we are headed for some small cycles," he told his audience. He cited various evidence related to the Sun's polar fields -- which appear to be decreasing in strength, A index trends, and cosmic ray data to support his assertion. Luetzelschwab cautioned, however, that past performance does not necessarily predict future performance.

"There seems to be a good correlation between how long a solar minimum is and the next solar cycle," said Luetzelschwab. "The longer you spend at solar minimum, the smaller the next cycle."

He observed that hams active since the 1950s and 1960s have experienced short inter-cycle solar minimums of approximately 2 years, until the one between Solar Cycle 23 and Solar Cycle 24, which lasted about 4 years. He also allowed that the science is not fully understood, and that some things appearing to be patterns may just be coincidences.

On the other hand, he said, it looks like the downward trend of disappearing sunspots has leveled off, suggesting that Solar Cycle 25 may see a lower smoothed sunspot number as opposed to zero or near-zero sunspots.

Counting those sunspots can be a subjective business. "That's a tough job," he said of the task, noting that it appears observer bias also has been a factor over the years, affecting historical sunspot data. "We now have new corrected data that are believed to be more accurate."



A chart of 10.7 centimeter solar flux from 2000 to 2016. [NOAA Space Weather Prediction Center graphic]

Luetzelschwab's article "The New Sunspot Numbers," appearing in the October issue of *QST*, discusses the new sunspot numbers.

Luetzelschwab cited historical sunspot cycle data going back centuries -- including the "Maunder Minimum" of zero and near-zero sunspots between the years 1645 and 1715 and a later, less-drastic "Dalton Minimum." He pointed out that over the last 11,000 years, 19 notable grand maximums -- including Solar Cycle 19 and the cycles around it -- and 27 notable grand minimums were recorded. "We're likely to have more of both grand maximums and grand minimums in the future," he predicted. The current system of numbering sunspot cycles begins with Solar Cycle 1 in the mid-18th century.

"We don't fully understand the process inside the Sun that makes solar cycles," Luetzelschwab said. "Thus, you should exercise caution with statements seen in the news."