MARCH 2006

THE MONTHLY NEWSLETTER of the SANTA CRUZ COUNTY AMATEUR RADIO CLUB

SHORT SKIP

Scientists Issue Unprecedented Forecast of Next Sunspot Cycle

Coils of hot, electrified gas, known as coronal loops, arc above active sunspots.

The next sunspot cycle will be 30 to 50 percent stronger than the last one, and begin as much as a year late, according to a breakthrough forecast using a computer model of solar dynamics developed by scientists at the National Center for Atmospheric Research (NCAR) in Boulder, Colo. The research results, funded by the National Science Foundation (NSF) and NASA, were published on-line on March 3 in the American Geophysical Union journal Geophysical Research Letters.

Scientists now predict that the next cycle, known as Cycle 24, will produce sunspots across an area slightly larger than 2.5 percent of the visible surface of the Sun. The cycle is projected to reach its peak about 2012, one year later than indicated by alternative forecasting methods that rely on statistics.

By analyzing recent solar cycles, the scientists also hope to forecast sunspot activity two solar cycles, or 22 years, into the future. The team is planning in the next year to issue a forecast of Cycle 25, which will peak in the early 2020s.

The researchers expect that predicting the Sun's cycles years in advance will lead to more accurate plans for solar storms, which can slow satellite orbits, disrupt communications, and bring down power systems.

The team has verified the information by using the relatively new technique of helioseismology, based in part on observations from NASA instruments. This technique tracks sound waves reverberating inside the Sun to reveal details about the interior, much as a doctor might use ultrasound to see inside a patient.

"Forecasting the solar cycle will help society anticipate solar storms," says Paul Bellaire, program director in NSF's division of atmospheric sciences, which funded the research. "Important discoveries are being made using helioseismology. Through this technique, we can image even the far side of the Sun."

The scientists gained additional confidence in the forecast by showing that the newly developed model could simulate the strength of the past eight solar cycles with more than 98 percent accuracy.

"The model has demonstrated the necessary skill to be used as a forecasting tool," says NCAR scientist Mausumi Dikpati, the leader of the forecast team at NCAR's High Altitude Observatory. The team also includes NCAR scientists Peter Gilman and Guiliana de Toma.

"This is a significant breakthrough with important applications, especially for satellite-dependent societies," says Gilman.

The Sun goes through approximately 11-year cycles, from peak storm activity to quiet, and back again. Solar scientists have tracked these cycles without being able to predict their relative intensity or timing, says Dikpati.

Solar storms are linked to twisted magnetic fields that suddenly snap and release tremendous amounts of energy. They tend to occur near dark regions of concentrated magnetic fields, known as sunspots.

The NCAR computer model, known as the Predictive Flux-transport Dynamo Model, draws on research indicating that the evolution of sunspots is caused by a current of plasma, or electrified gas, that circulates between the Sun's equator and its poles over a period of 17 to 22 years.

The plasma acts as a conveyor belt, transporting the imprints of sunspots from the previous two solar cycles. As they return toward the equator, they become stretched and twisted by the internal rotation of the Sun, gradually becoming less stable than the surrounding plasma. This eventually causes coiled-up magnetic field lines to rise up, tear through the Sun's surface, and create new sunspots, beginning the cycle again.

From the National Sciece Foundation web site. http://www.nsf.org

CLUB MEETING FRIDAY MARCH 17, 7:30 P.M.

Feb 18

Our session today commenced with our usual free-form discussions of all things great and small. A special curiosity was Reed's (KG6RQH) breadboard model of a WWII prisoner RX. The semiconductor diode detector was a piece of pencil lead in contact with an old and maybe rusty razor blade. Pat AA6EG described his low cost, long boom Quad/Yagi (Quagi) antenna for 70 cm. We discussed how critical the accuracy of the element lengths and spacing would be to maximum gain. Alan (KM6VV) had shown interest in the PIC-Elmer kit supplied via the AMQRP club and intends to try the on-line tutorials that go with it. Ron (W6WO) described the modelling of HF antenna radiation taking into account terrain using digital elevation maps. Initial results using N6BV's YT program on the path from Kentucky to Europe are very encouraging.

As planned we reserved the second half of the session for a preliminary conversation on providing Internet access to the K6BJ repeater and HF stations. Minutes of this session will be mailed to a separate mailing list. This list will be created as the primary means to distribute subsequent information about the project and those who remained for the session today are deemed to be sufficiently interested to be included. W6WO N6IL KC6VJL AE6RF KG6MMO KE6AFE KG6RQH AA6EG NR6S K6BDK W8FLL AB6WM

We will also include others who have expressed interest but were not in attendance K6EXT, AE6KS and our friend and advisor Tom Hornick

—Ron W6WO

Treasurer's Report

As of March 1, 2006, Treasurer Kathleen McQuilling, KI6AIE, reports that the SCCARC treasury has $5,824.46 in cash and bank accounts. At that time all financial obligations had been met.

On Radio Ranch

By Wayne Thalls, KB6KN

With all the hype about cyberspace, the Worldwide Web and the Internet we could easily be overwhelmed by the changes around us. There have been other times of great technical accomplishment and progress. Arguably, the first four decades of the twentieth century was a time of even greater technological influence on American life.

Tremendous economic, social, and political change resulted from the electrification of cities; introduction of the automobile and airplane; and the advent of radio. While all of these things were perfected during the final decades of the nineteenth century, they became commonplace during the first half of the last century.

There is a site in Santa Cruz County that epitomizes the changes of those early days. It is Wilder Ranch State Park, located two miles north of Santa Cruz on California highway 1.

Deloss D. Wilder started the Wilder Dairy Ranch in 1871 on former Spanish ranchero lands. Upon his death in 1906, his son Melvin D. took over management of the operation.

Melvin was a technical innovator. He had briefly studied electrical engineering at Stanford. Around 1895 he built a water wheel powered generator to provide power to the barnyard. Arc lamps on high poles were used to create an artificial sunrise, so the cows could be milked earlier. This enabled the dairy to beat delivery times of their competitors. Most American farms did not have electrical power until the late 1930's, thanks to Franklin Roosevelt's Rural Electrification Administration (REA).

Later, Wilder added lights in the house. He installed a ventilation fan in the kitchen. Even the closets had incandescent lights, actuated when the door opened. Reportedly the Wilder Dairy was the first in the county to use mechanical milking machines. They were the first to introduce returnable glass bottles. In the early twenties, the horse drawn delivery wagons were replaced with trucks. The Wilder family owned one of the first automobiles in the county.

Melvin Wilder became interested in wireless around 1920. He acquired his first equipment from Cliff McCormick, 6OW. Cliff went to work on the ranch for a few months following his 1922 graduation from Santa Cruz High School. I interviewed McCormick, now W6OW, many years later. Cliff provided a 1921 photo of his rig. He described to me how he and two husky ranch hands wrestled electrolytic capacitor jars and rectifiers up the stairs to the third floor of the house, where Wilder set up a ham shack.

The long-time ranch foreman once described the numerous antenna- projects with which he became involved. At one time a tower of redwood lath was constructed adjacent to the house. A long-wire antenna was strung to the nearest hill, several hundred yards to the east. The white painted tower soon became a landmark for passing ships. After only a few months it all came down during a winter storm. Highway 1 now bisects the ranch, running between the house and that hill.

Melvin continued to operate W6CEH until World War 2 forced all hams off the air. He died in 1945, prior to the lifting of the wartime restrictions on ham operations.

For several years, the Santa Cruz County Amateur Radio Club provided historical exhibits and a special event station for Fourth of July festivities at the state park. Our high-tech exhibit was set up adjacent to a Spanish adobe built in 1781. Each year food, music and entertainment, continue to attract several thousand visitors to the holiday event.

SCCARC Membership Renewals

If the date on your mailing label isn't in 2006, your membership renewal has not been processed for this year. The renewal deadline to be included in this year's member roster is March 31 (this is also the deadline for address/phone/email updates). Annual dues are $25 for full members, $6 each for each additional member at the same mailing address, and $10 for full-time students age 18 or under. Dues may be paid in cash or check (payable to SCCARC) at regular Club meetings, or checks may be mailed to SCCARC, P.O. Box 238, Santa Cruz, CA 95061-0238. Remember, ARRL dues may also be paid through your Club. Email ki6aie@k6bj.org with any questions.

—Kathleen KI6AIE, Treasurer, SCCARC

By Art Lee WF6P

CHATTER

Am all packed for a nice little boat ride. We go to Alameda and spend the night aboard, Bobby McGee, a Hunter 46 sloop. We are hoping for clear sailing on Tuesday morning. The weather has been rotten as we all know, but there is a small break in the storm systems that we are going to squeeze through. We have plenty of foul weather gear on board and I have a heavy wool sweater brought back from Scotland by my daughter Joyce, KN6RR. Fishermen wear these in cold weather so I should be toasty warm. I have a sched set up with Donna, AB6XJ, on 40 and 80 meters, plus skeds for the Baja Net. We will be chatting, hopefully, if the SSB radio gets out this time. It was disappointing on the last outing when the radio didn't work. The antenna hookup was wrong but we did receive OK. We sail on the tide and hopefully, it will take us right out under the Golden Gate, speeding us on our way to Half Moon Bay. We will anchor overnight and return to Moss Landing on Wednesday, late. May be a windy and wet passage, but fun, I'm sure.

As I have mentioned before, a visit to Costco will usually result in the meeting of a club member. Such was the case two days ago when I ran into Sal Basile, N6WSR. His XYL Teresa, KC6MIJ, was there also but I couldn't catch up with her. Sal told me that their son lives in LA, works for the FBI, and has three children. Sal and Teresa are happy grandparents.

Rich Hanset, KI6EH, went in for some surgery to his neck. He's home now and doing well, but then a few days later, XYL Lee, KC6BML, also went in for surgery. It is tough when two members of the household are recuperating at the same time. From all of us, we wish you both a speedy recovery.

I am looking forward to attending the next CAKE meeting on March 11th. Ron, W6WO, said it would be his last for a while. Those meetings are informal, informative and fun. The food is good, as is the coffee.

K6BJ Internet Access

I Really enjoyed the inaugural Meeting we hand to get us going on wireless connectivity to the internet at K6BJ. A daunting, but for sure to be rewarding project.

Tom Hornick, CIO of Scheid Vineyards was not with us, at the meeting, but I/we really extend our welcome to Tom and his experience and expertise, along with the great mix of talent that gathered at GIGI's yesterday. Tom, Ron Skelton and I have worked together on similar projects, and If Tom is allowed to lift corporate veil a little, of his wonderful work at Scheid Vineyards to us, you will see a wonderful web based, scientific, 'view' of Scheid vineyards that is utilized by their customers.

Among Tom's accomplishments are a great Part 15 based 802.11 system that extends practically the whole length of the Salinas Valley where their vineyards are located, including broad band video with 802.11 link shots of up to 24 miles. Amazing what you can do with BBQ grill antennas and good site reconnaissance and planning.

Among many topics yesterday, there was quite a bit about internet firewalls. I myself don't have a full understanding of them, but found this comprehensive document about them that may be useful, and has more detail than I currently understand or need. It has an early 'beginners' section about firewall basics that I am digesting.

I have a TOPO mapping program which can do quick, accurate profiling, azimuth calculations, of proposed links and can create good overhead maps of the proposed links. An example of which is one that Ron, Tom and I did some time back between Elkhorn Slough and CSU Monterey Bay.:

Here are some posted pictures that were placed on the internet for team viewing of that project... Our (K6BJ) group can easily get a free site from MSN to do the same for any docs or photos that we need to distribute or archive during our work. See:

Topo Profile of CSUMB to Elkhorn: http://groups.msn.com/towertrailers/shoebox.msnw?action=ShowPhoto&PhotoID=21

Overhead Plan Map of CSUMB to Elkhorn: http://groups.msn.com/towertrailers/shoebox.msnw?action=ShowPhoto&PhotoID=22

Example of a Panel Antenna/802.11 transmitter used at Elkhorn Slough: http://groups.msn.com/towertrailers/shoebox.msnw?action=ShowPhoto&PhotoID=18

A useful photo we used for some of the staff to get oriented to the line of sight between Elk and CSUMB: http://groups.msn.com/towertrailers/shoebox.msnw?action=ShowPhoto&PhotoID=24

Heretofore unknown Killer trees were discovered in the path; A show stopper. http://groups.msn.com/towertrailers/shoebox.msnw?action=ShowPhoto&PhotoID=109

—73, DX, de Pat AA6EG

EOC Antenna Repaired

As a small group of volunteers have done weekly for the past few months, on 7230kHz LSB at 10 a.m.

Wednesday morning we checked our Santa Cruz County EOC into the California OES Emergency Service Net.

Normally signals are good between our County EOC station and the Net Control Station in San Bernardino, and elsewhere around the State. This week, although we heard the NCS well as usual, he told us our signal was too weak. They reported our signal as only "Circuit Merit 1" instead of our usual "Circuit Merit 5".

CM 5 = Completely clear, each word fully understood.

CM 4 = Clear with slight amount of static and or interference. Each word is understood.

CM 3 = Static and or interference present, but the bulk of the transmission is understood. without having to be repeated. We deem this to be the margin of acceptable, professional. communication.

CM 2 = Static and interference are prevalent and words are missing.

CM 1 = Signal is barely evident and the words are not understandable.

CM 0 = Nothing.

After the net we checked over our HF station's settings, and tuned up with the manual antenna tuner. Things seemed better. But upon leaving the EOC, I noticed one leg of the station's old multi-band "Alpha-Delta DX-CC" HF dipole antenna had become disconnected from it's telephone pole fastening and had fallen down and was lying on the ground. The other leg of the antenna was still attached normally up on the other pole but much of the antenna was on the ground. No wonder our signal was down!

Thursday morning, after a brave climb by JV K6HJU to reattach the end of the antenna at the top of the tall pole next to the SCCARC Club Station building, the antenna was back up in the air where it had been!

Thanks very much JV!

—73, Cap

SCCARC Board - 2006

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MONTEREY BAY REPEATER ACTIVITY

Santa Cruz County ARC	K6BJ 146.790- PL 94.8 Santa Cruz KI6EH 147.945- PL 94.8 Watsonville K6BJ 440.925+ PL 123.0 Santa Cruz • SCCARC Net Monday 7:30 PM 146.79- /147.180+ /440.925+ linked • SCCARC 10 Meter Net 28.308 MHz USB Monday 7:00 PM
San Lorenzo Valley ARC	WR6AOK 147.120+ PL 94.8 Ben Lomond • SLVARC Net Thursday 7:30 PM
Loma Prieta RC	WR6ABD 146.640-(PL 162.2) • LPRC Net Tuesday 8:00 PM
Naval Postgraduate School ARC	K6LY 146.97- PL 94.8 / 444.700+ PL123 (Linked) Monterey • NPSARC Net Wednesday at 8 PM on K6LY/R • Monterey ARES Net Wednesday 7:30 PM K6LY 146.970- (PL 94.9)
ARES Nets Followed directly by	SC County Wide ARES Tuesday 7:15 PM on AB6VS 440.550- W6WLS 147.180+ AE6KE 146.835-(Linked repeaters / PL 94.8) • SLV ARES W6JWS 146.745-(PL 94.8) & WR6AOK 147.120+(PL 94.8) on alternate Tuesdays • South County ARES K6RMW 147.00+ (PL 94.8) • LPrieta ARES AE6KE 146.835- / AB6VS 440.550+ (Linked /PL 94.8) • Santa Cruz ARES K6BJ 146.79-/ (PL 94.8)

• Newsline (Ham News) Broadcast Wednesday at end of NPSARC Net
• Santa Clara Valley Section Traffic NET Tuesday 9:00PM 146.640- (PL 162.2)

FOR MORE INFO SEE: http://www.k6bj.org/freq.html

SCCARC Calendar of Events

SCCARC Meeting	Friday	Mar 17
Short Skip Deadline	Monday	April 10
SCCARC Meeting	Friday	April 21

MONTHLY MEETINGS.

The SCCARC Meets at 7:30 PM, on the THIRD FRIDAY of the each month (except December). Meetings are at Dominican Hospital, 1555 Soquel Drive, Santa Cruz.

SHORT SKiP
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KK6EK, leader of K7C is the speaker for March...

The crew of Kure Island DX