

ScienceScope

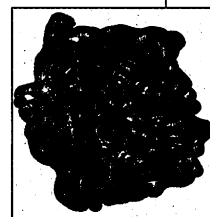
LOOKING AHEAD

The future may be "made of the same stuff as the present," the French philosopher Simone Weil wrote in the 1940s, but time finds surprising ways to transform the familiar into the fresh. *Science* previews what may be some of 2000's new twists on old tales:

Help Wanted Some plum science policy jobs are open—but who will risk taking them in the last year of the lame-duck Clinton Administration? The answer might come this spring, once search committees are through vetting candidates to replace former National Institutes of Health (NIH) head Harold Varmus and Department of Energy science czar Martha Krebs. The White House Office of Science and Technology Policy (OSTP) is also seeking an infusion of new blood. But according to Duncan Moore, OSTP's associate director for technology, "it's getting harder to attract good people [in the] eighth year of an 8-year administration."

Sharper Focus Cell gazers are anticipating more detailed looks at some of the major molecular complexes that make life possible. Using improved methods and machines, crystallographers may unveil the first high-resolution structure of one of the ribosome's two subunits by year's end, revealing the innards of the cell's protein factory (above). And researchers will get to know other structures—such as the nuclear pore that allows molecules to migrate in and out of the nucleus—in more vivid detail.

Third Time Out The Kyoto Treaty to stem global warming is frozen in political limbo in the United States, where the current Congress is likely to reject the pact—but that won't stop international teams from stepping up work on climate change science and policy. A September deadline looms for what one researcher calls "the climate Bible"—the Intergovernmental Panel on Climate Change's (IPCC's) draft *Third Assessment Report*, a once-every-5-years bid to sum up the state of the world's climate knowledge. But donor nations may have to cough up some cash quickly: The IPCC faces a "dire financial situation" because many nations have stiffed the body, according to chair Robert Watson. The "lack of financial commitment is rather disturbing, given the incredible effort of the experts who give so freely of their time," he says.



KIF1A data at the meeting. "It's very nice work and leads to new questions," such as what biases KIF1A's movement in one direction, comments David Hackney, a biophysicist at Carnegie Mellon University in Pittsburgh.

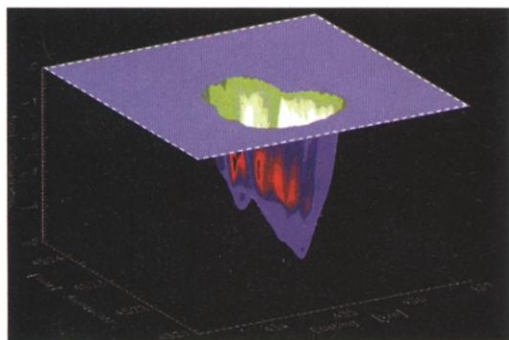
Taylor thinks there may be still more kinds of motors chugging away under the hood of the cell. "The mechanisms you can generate from the [general myosin-kinesin] structure are much broader than we had thought," he explains. "There are a whole bunch [of these proteins] out there whose details have not been worked out."

—ELIZABETH PENNISI

REMOTE SENSING

Satellite Radar Spies City Subsidence

NAPLES, ITALY—For the past 9 years, researchers have been using the European Space Agency's remote-sensing satellites ERS-1 and ERS-2 to detect small movements of Earth's surface caused by earthquakes or volcanic activity, thanks to a technique known as radar interferometry. One



Sinking feeling. Radar spotted subsidence in Naples that coincided with excavation of a new metro tunnel.

team of researchers based here has been studying movements in Campi Flegrei, a volcanic area west of Naples, since 1992, when ERS data for that area became available. Much to their surprise, in recent images the researchers noticed that a well-defined 4-square-kilometer area of Vomero, a part of Naples, appeared to have subsided. "We observed that between 1992 and 1996 there was a rather significant subsidence of 5 to 6 centimeters," says Riccardo Lanari of IRECE, Italy's National Research Council laboratory for research in electromagnetism and electronic components in Naples, noting that this is the first time subsidence has been detected this way in a city.

At first, the team thought this apparent slump was a data error or due to atmospheric effects, until they noticed that it coincided, in both location and time, with the construction of a new underground railway line. The researchers have informed the city administration of Naples, as well as civil pro-

tection authorities and the railway company, about their discovery.

The two ERS satellites produce detailed radar images of the ground by bouncing pulses of radar waves off the surface. Radar interferometry involves taking an image of a certain area of terrain and then snapping the same spot some time later. Using a computer, one image is subtracted from the other. If there has been no change in the terrain, the resulting interferogram will be blank, but if the terrain has shifted, some of the reflected waves in the second image will be out of step with the corresponding waves in the first. This "phase" change will show up on the interferogram as interference fringes, each of which corresponds to a displacement of the surface of half the wavelength of the radar waves, which in the case of the ERS satellites would be 2.8 centimeters.

Using this method, the Naples team has detected ground movements in Campi Flegrei of as much as 25 centimeters. At first the team dismissed the much smaller shifts in Vomero as artifacts. However, they kept finding the same fringes consistently in several interferograms generated from data taken over different time spans. Lanari recalls that one of his co-workers said: "Hey, this is the area where they are building the metro."

From a study of 45 interferograms spanning different time periods, the subsidence became apparent in 1992 and coincided with the excavation of the new metro tunnel under Vomero. When the team superimposed the trajectory of the underground line on the interferograms, they found "a very strong correlation between the location of the maximum subsidence and the development of the underground. ... It is clear, and there is no discussion," says Lanari. They also observed that the subsidence gradually slowed after 1996 when excavations were completed.

Team leader Giorgio Franceschetti of the University of Naples says that their fortuitous finding may open up a variety of applications for radar interferometry. It could be used to keep an eye on densely populated areas where human activity may be affecting the stability of surface terrain, such as the Padano area near Venice, where natural gas is being extracted, and an area of Paris where other researchers believe they have already detected subsidence of about 1.5 centimeters. Jean-Claude Souyris of France's space agency, the CNES, in Toulouse confirms that "preliminary results" obtained using the same satellites show subsidence in a 100-meter-square area around the Condorcet metro station in Paris.

—ALEXANDER HELLEMANS

Alexander Hellemans writes from Naples, Italy: