News item: Ocean Wind Power Maps Reveal Possible Wind Er Sources

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Efforts to harness the energy potential of Earth's ocean winds could soon gain a important new tool: global satellite maps from NASA. Scientists have been creat maps using nearly a decade of data from NASA's QuikSCAT satellite that reveal areas where winds could produce wind energy.

The new maps have many potential uses including planning the location of offsh farms to convert wind energy into electric energy.

"Wind energy is environmentally friendly. After the initial energy investment to bu install wind turbines, you don't burn fossil fuels that emit carbon," said study leac Tim Liu, a senior research scientist and QuikSCAT science team leader at NASA Propulsion Laboratory in Pasadena, Calif. "Like solar power, wind energy is gree energy."

QuikSCAT, launched in 1999, tracks the speed, direction and power of winds ne ocean surface. Data from QuikSCAT, collected continuously by a specialized mi radar instrument named SeaWinds, also are used to predict storms and enhanc accuracy of weather forecasts.

Wind energy has the potential to provide 10 to 15 percent of future world energy requirements, according to Paul Dimotakis, chief technologist at JPL. If ocean ar high winds were tapped for wind energy, they could potentially generate 500 to 8 of energy per square meter, according to Liu's research. Dimotakis notes that wl is slightly less than solar energy (which generates about one kilowatt of energy p square meter), wind power can be converted to electricity more efficiently than s energy and at a lower cost per watt of electricity produced.

According to Liu, new technology has made floating wind farms in the open ocea possible. A number of wind farms are already in operation worldwide. Ocean win have less environmental impact than onshore wind farms, whose noise tends to sensitive wildlife in their immediate area. Also, winds are generally stronger over ocean than on land because there is less friction over water to slow the winds dc there are no hills or mountains to block the wind's path.

Ideally, offshore wind farms should be located in areas where winds blow continu high speeds. The new research identifies such areas and offers explanations for physical mechanisms that produce the high winds.

An example of one such high-wind mechanism is located off the coast of Northe California near Cape Mendocino. The protruding land mass of the cape deflects winds along the California coast, creating a local wind jet that blows year-round. jets are formed from westerly winds blowing around Tasmania, New Zealand, ar del Fuego in South America, among other locations. Areas with large-scale, high power potential also can be found in regions of the mid-latitudes of the Atlantic a Pacific oceans, where winter storms normally track.

The new QuikSCAT maps, which add to previous generations of QuikSCAT winc

atlases, also will be beneficial to the shipping industry by highlighting areas of th where high winds could be hazardous to ships, allowing them to steer clear of th areas.

Scientists use the QuikSCAT data to examine how ocean winds affect weather a climate, by driving ocean currents, mixing ocean waters, and affecting the carbo and water interaction between the ocean and the atmosphere.

The research, published in early July in Geophysical Research Letters, was func NASA's Earth Science Division.

See original news item, *ScienceDaily*, Jul-10-2008

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