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GIS to Meet Renewable Energy Goals

Kyushu University—Airflow Analysis for Wind Power

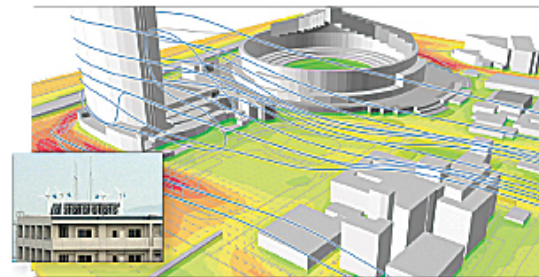
To harness the power of the wind, one must first study the wind's movement. Takanori Uchida, a professor at the Kyushu University Research Institute for Applied Mechanics in Japan, understands this notion. Uchida works with computational fluid dynamics (CFD) technology and GIS to study and predict wind flow.

Wind flow through an urban landscape can help determine the potential for rooftop windmills. An energy engineer can assess not only the best roof but the best location on the roof to place wind generators, as well as predict what the energy output of the generator might be, given certain conditions.

Energy companies can apply CFD to siting transmission assets or assessing how wind will flow around certain complex shapes, such as various types of power generators. Users may choose to determine a landscape's active wind corridors and combine other information, such as environmental considerations and land titles, to assess the value of a wind farm site.

Uchida and his team have developed a new ArcGIS Desktop extension, Airflow Analyst for ArcGIS, that makes it easier for people to process wind energy data in a GIS environment, turning wind assessment into more practical applications. The extension can model data; perform complex calculations; and generate visualizations in 2D, 3D, animated, and temporal representations. With this extension, researchers can more easily perform risk management wind analysis, such as forecasting diffusion of smoke, noxious gases, and other toxic pollutants.

For more information, contact Environmental GIS Laboratory Co. Ltd (e-mail: arava@engisinc.com) or Takanori Uchida (e-mail: takanori@riam.kyushu-u.ac.jp).



Kyushu University: A model of a baseball stadium in Japan, showing the airflow around the stadium. This was created with ArcView, ArcGIS 3D Analyst, and Airflow Analyst.