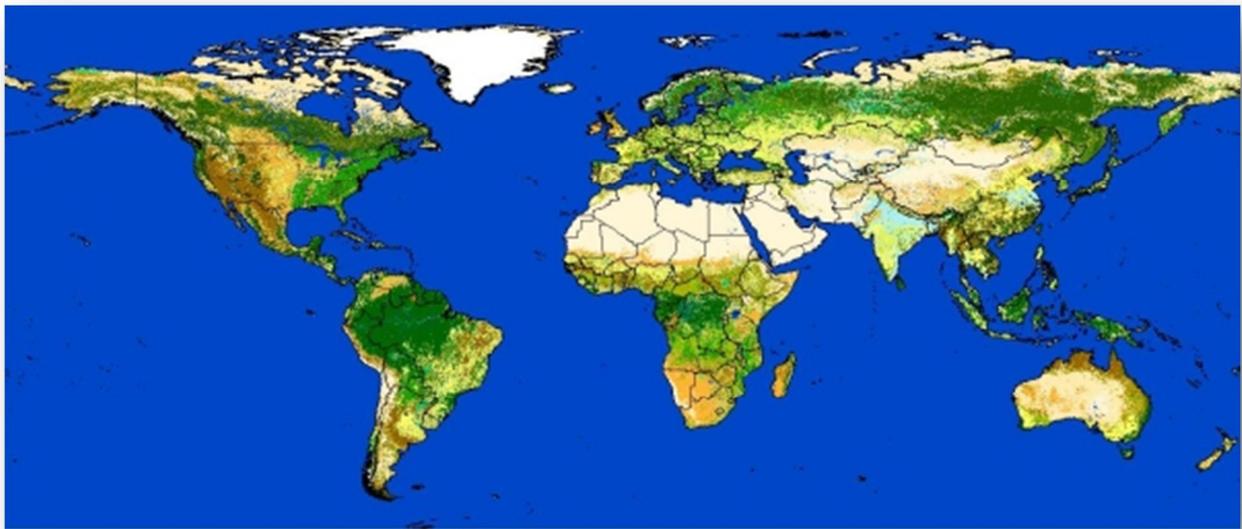




NEW SERVICE OF ROUGHNESS MAPS

Nayxa Energy Services (www.nayxa.com) offers a new service on building WAsP and CFD compatible roughness maps, available for any site throughout the world.

Madrid, 18th January 2012 – *Nayxa Energy Services*, an engineering company specialized in the wind resource assessment and site assessment field offer to his clients a new service: building WAsP and CFD compatible roughness maps, available for any site throughout the world.



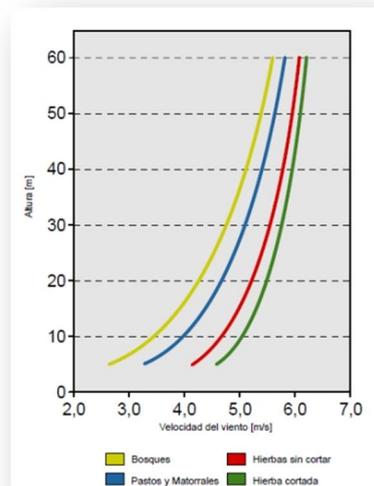
What is a roughness map?

The land use or terrain roughness is defined as the set of obstacles and vegetation affecting the wind speed in the surface layer of the atmosphere which affects directly the operation of wind turbines. The roughness of an area is determined by the size and distribution of the different elements that it contains and therefore it is possible to assign a roughness length value, Z_0 to describe it.



¿Why is it necessary a roughness map?

The terrain roughness affects the way wind speed changes with height and therefore the energy production by a wind turbine. The energy yield of wind turbines rises with the third power of the wind speed, which makes the roughness map an essential tool to carry out a precise wind resource assessment. As it can be observed in the next plot a logarithmic relation exists between the roughness of an area and the wind profile with height. An increase in roughness will produce the reduction of the wind speed with height. This is especially important at sites where the measurements do not cover the rotor plane of the wind turbine.

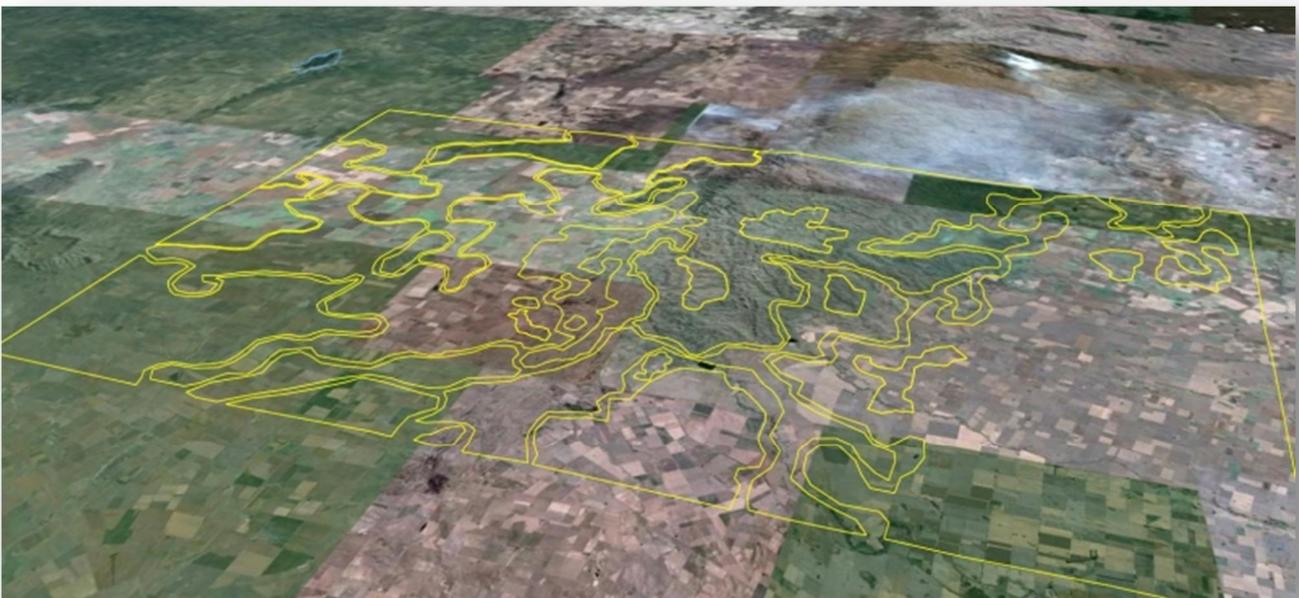


The turbulence intensity also depends on the terrain roughness, vegetation and obstacles in the surroundings of a wind farm. The affection might reach as far as 10 kilometers from our site. An increase of the roughness of an area will produce a rise in the turbulence intensity and therefore in the loads a wind turbine is going to withstand. This is why the land use also affects the structural safety of wind turbines.

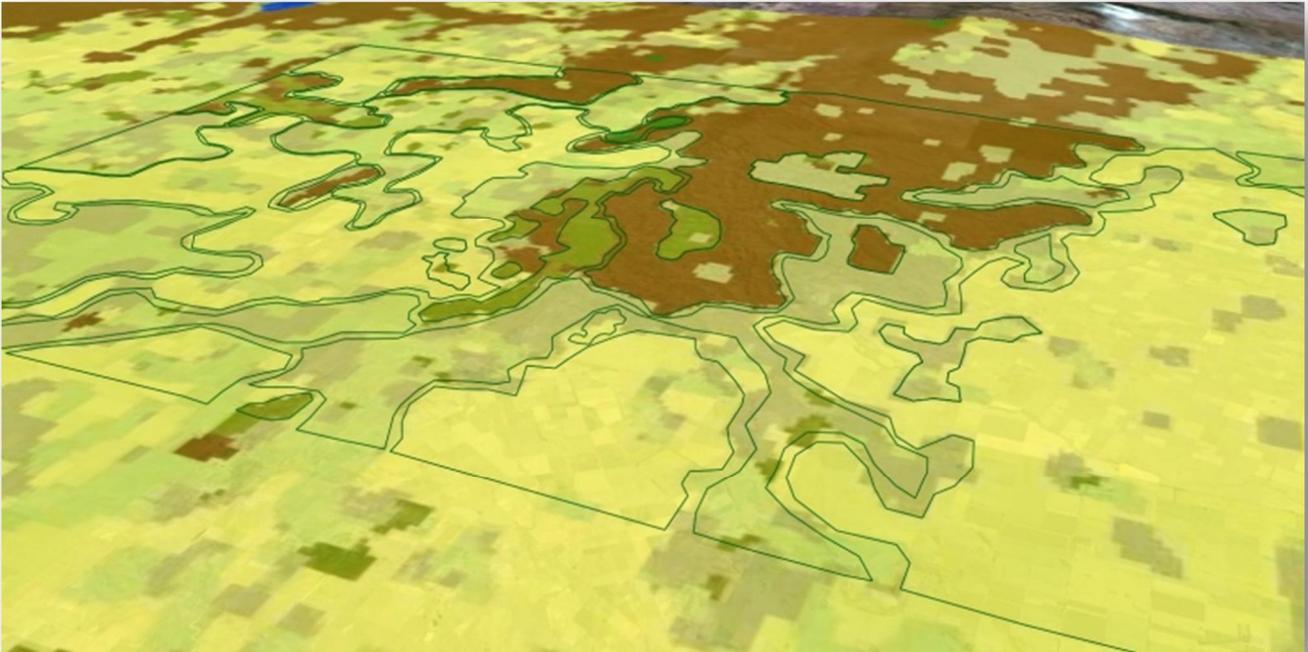


Methodology used to obtain the roughness maps

On these two pages it is possible to observe the process of hand making of a roughness map. Nayxa uses 10 different global data bases of land use data and combines them with aerial pictures of the site and surroundings. Continuous cross checking among all the data is done with the goal of describing the vegetation with extraordinary reliability. The process ends with the production of a WASP/CFD compatible roughness map, describing the vegetation in an area of 20x20 kilometers around the wind farm. Greater areas are available at special orders.



The service of roughness maps is available for any global territory of our clients' choice at an extraordinary competitive price. Please consult us for discounts when several products might be required.



For more information you might contact Nayxa Energy Services through our web site www.nayxa.com or the following mail address info@nayxa.com



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About Nayxa Energy Services

Nayxa is a leading independent consultancy company in the area of wind resource assessment and site assessment. At Nayxa we work with commercial software like WAsP or WindFarmer but also with the state-of-art when it comes to in-house wind software development. A continuous research and development plan is carried out at Nayxa.

At Nayxa our philosophy or working is directed and related to a permanent contact with our clients, personalizing at any moment every single project. At Nayxa we have worked as wind resource consultants in more than 20 countries all over the world developing over 10,000 MWs of wind power projects. We are willing to face new challenges and projects and help our clients develop their wind farms.

THE FUTURE IS RENEWABLE!