Wind Potential determination in a known area

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Abstract **-The economic operation of wind turbines is completely dependent upon the local wind conditions. Statistically determined wind velocity distribution is decisive for the expected energy yield. Before the pillars of wind turbines are erected, the expected energy potential should be predicted as precisely as possible to reduce the investments risk. Energy predictions based on local wind conditions measured at the hub height of a planned turbine give the most exactly predictions. However, this involves an expansive and time (years) consuming process. Our issue for fine wind emplacement is based on a Patent Application that claims that the wind potential in any other point of a known area can be inferred provided that we know the wind potential in one point of the area. Our aim is 1) to avoid the obsolete, expansive and inaccurate method to build wind map, and 2) to offer a final simply to be used tool. To solve that problem we must enter in the field of high mathematics of fluid dynamics.**

I. INTRODUCTION …

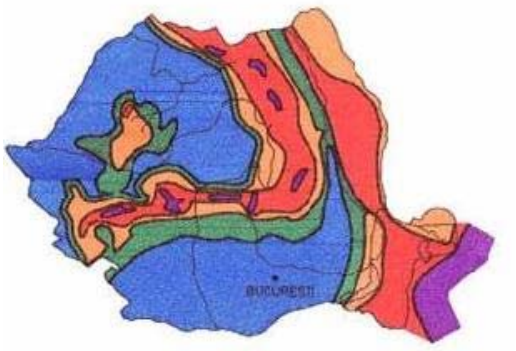

Figure 1. A map of wind potential (ICEMENERG'92)

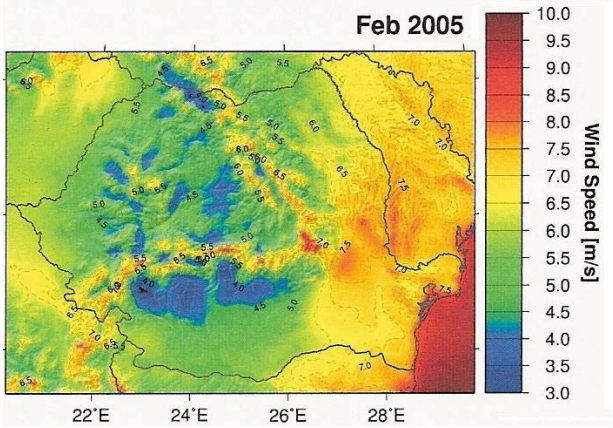

Figure 2. Other map of wind potential (ANEMOS'06)

II. PROBLEM FEATURES …

III. MATHEMATICAL METHOD …

IV. CONCLUSION …

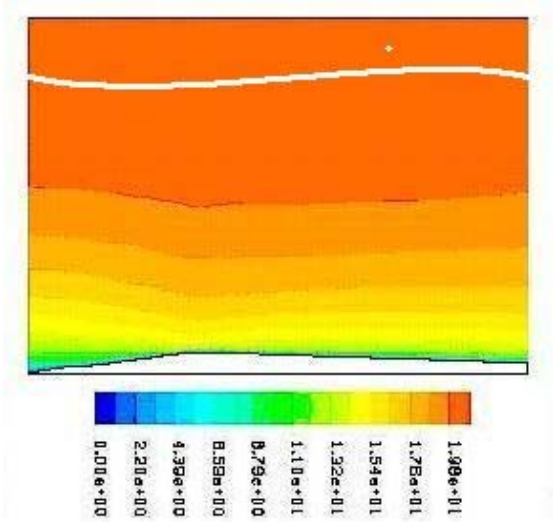

Figure 9. Wind velocity structure in x and z direction

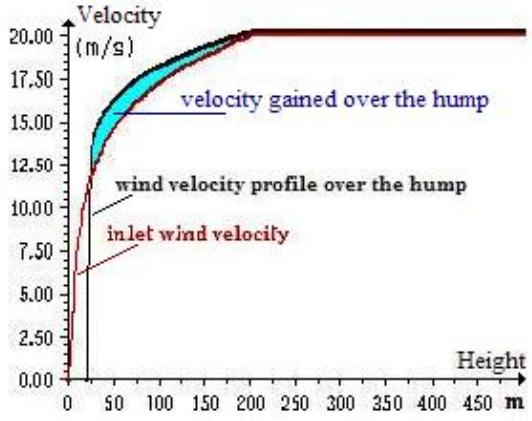

Figure 10. The gain in velocity over the hump

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(See IEEE - integral publication)