A STUDY ABOUT SOIL TEMPERATURE VARIATION AT DISTINCT SUB-SURFACES

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ABSTRACT

Heat transfer among sub surfaces of soil has been a diffusion problem of great interest. How heat flow patterns at ground level at deeper surface differ, that is the point of interest and concern to researchers [1]. Heat transfer is closely associated with heat- conductivity, which results from the difference in the temperature of various soil layers. Soil temperature depends upon the process of heat flow between the soil surface and the deeper layer. The flow of heat is directed from warmer layers to cooler layers.Actually soil temperature varies from month to month as a function of incident solar radiation, rainfall, seasonal swings in overlying air temperature, local vegetation cover, type of soil, and depth in the earth, but due to the much higher heat capacity of soil relative to air and the thermal insulation provided by vegetation and surface soil layers, seasonal changes in soil temperature, deep in the ground are much less than and lag significantly behind seasonal changes in overlying air temperature[2]. A few feet below the surface only conductance can take place. So heat transfer by radiation need not be taken into account. As only heat transfer by conductance is to be considered, linearity and time invariance, both the properties will be enjoyed in such situation. It is a matter of experience that on a sunny day, the temperature at the surface of the soil rises rapidly, reaches a maximum in the early afternoon, and falls sharply around sunset. Here in this paper, authors want to elaborate, how the temperature at deeper sub-surfaces will vary and how 24-hour component of the surface temperature is affected at sub-surfaces at specified depths.

KEYWORDS: *Phasor, Propagation Constant, Attenuation Constant, Phase Constant, Attenuation Factor*