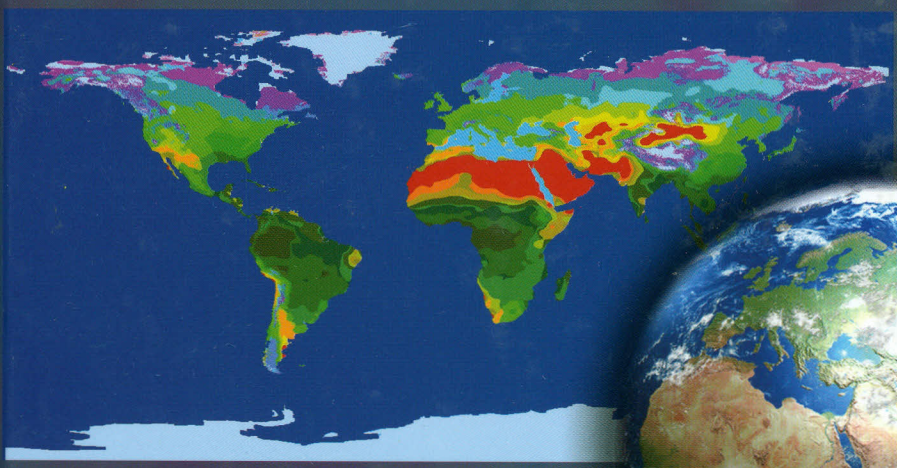
Surface Modeling
High Accuracy and High Speed Methods



$$\begin{cases} \dfrac{f_{i+1,j}^{(n+1)}-2f_{i,j}^{(n+1)}+f_{i-1,j}^{(n+1)}}{h^2}=\left(\Gamma_{11}^1\right)_{i,j}^{(n)}\dfrac{f_{i+1,j}^{(n)}-f_{i-1,j}^{(n)}}{2h}+\left(\Gamma_{11}^2\right)_{i,j}^{(n)}\dfrac{f_{i,j+1}^{(n)}-f_{i,j-1}^{(n)}}{2h}+\dfrac{L_{i,j}^{(n)}}{\sqrt{E_{i,j}^{(n)}+G_{i,j}^{(n)}-1}} \\ \dfrac{f_{i,j+1}^{(n+1)}-2f_{i,j}^{(n+1)}+f_{i,j-1}^{(n+1)}}{h^2}=\left(\Gamma_{22}^1\right)_{i,j}^{(n)}\dfrac{f_{i+1,j}^{(n)}-f_{i-1,j}^{(n)}}{2h}+\left(\Gamma_{22}^2\right)_{i,j}^{(n)}\dfrac{f_{i,j+1}^{(n)}-f_{i,j-1}^{(n)}}{2h}+\dfrac{N_{i,j}^{(n)}}{\sqrt{E_{i,j}^{(n)}+G_{i,j}^{(n)}-1}} \end{cases}$$

$$\begin{cases} \min\left\|\begin{bmatrix}\boldsymbol{A}\\ \boldsymbol{B}\end{bmatrix}\cdot\boldsymbol{z}^{(n+1)}-\begin{bmatrix}\boldsymbol{d}^{(n)}\\ \boldsymbol{q}^{(n)}\end{bmatrix}\right\| \\ s.t. \\ \quad \boldsymbol{S}\cdot\boldsymbol{z}^{(n+1)}=\boldsymbol{k} \\ \quad \boldsymbol{l}_b<\boldsymbol{z}^{(n+1)}<\boldsymbol{u}_b \\ \quad \boldsymbol{C}_l\cdot\boldsymbol{z}^{(n+1)}\le\boldsymbol{b}_l \end{cases}$$

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