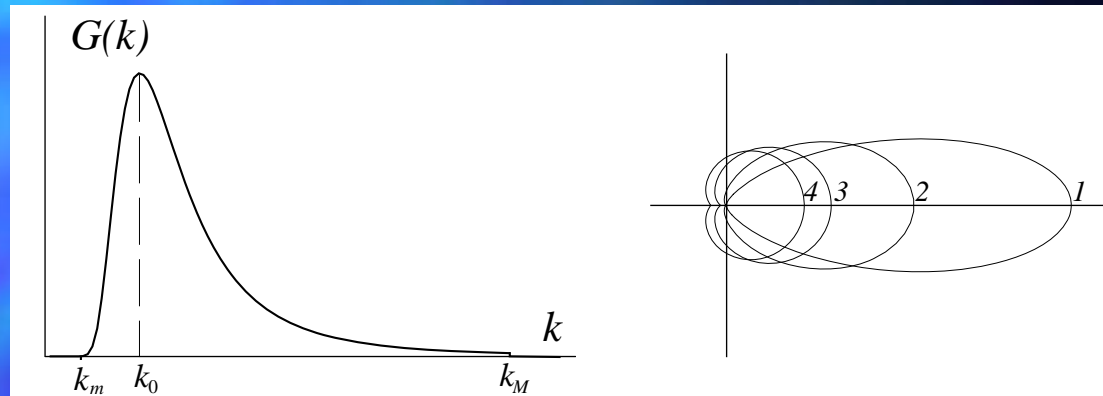


Computer Simulation of Water Surface View

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1. Sea swell simulation

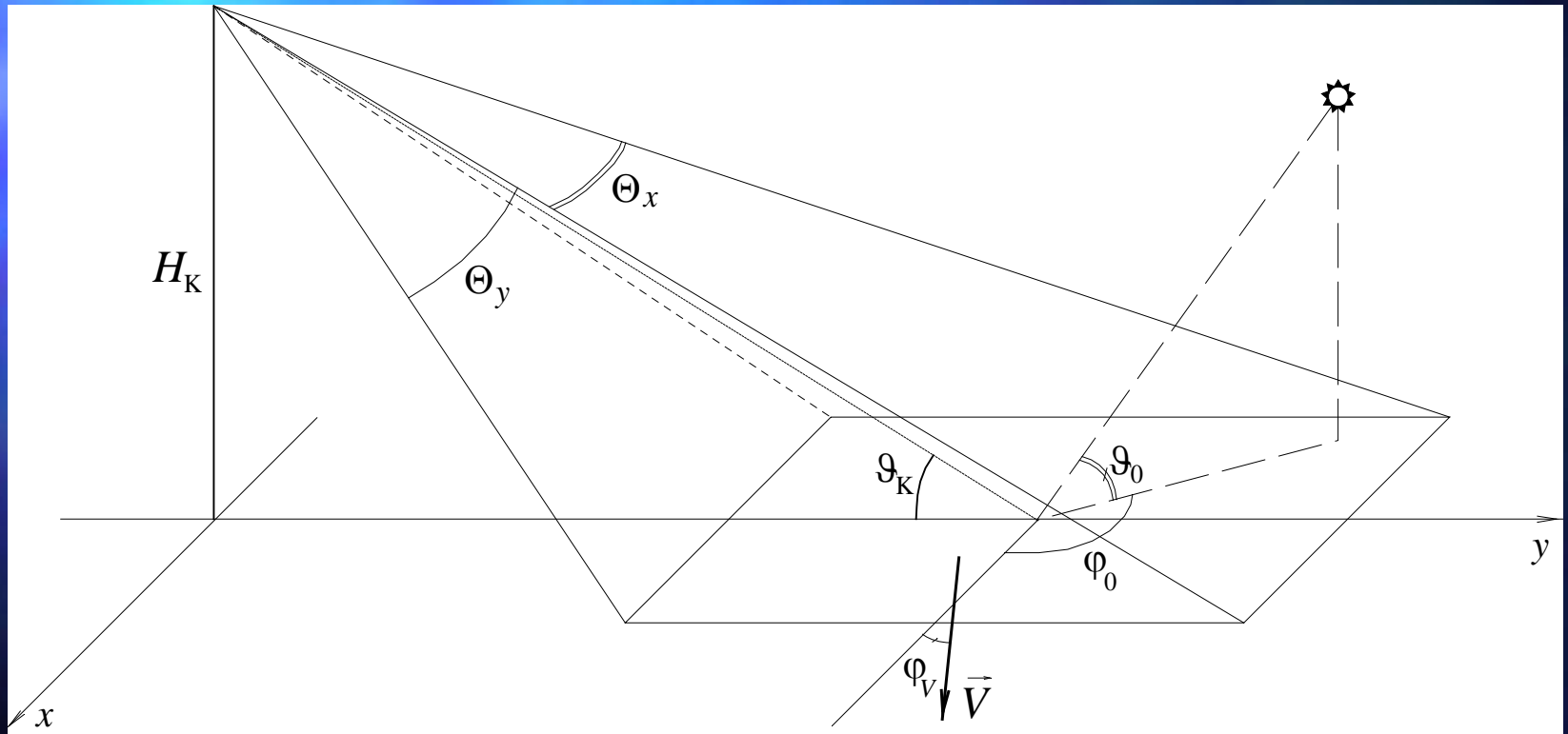


$$S(\mathbf{k}) = \int B(\boldsymbol{\rho}) e^{i\mathbf{k}\boldsymbol{\rho}} d^2\boldsymbol{\rho} = \int \langle \zeta(\mathbf{r}, t) \zeta(\mathbf{r} + \boldsymbol{\rho}, t) \rangle e^{i\mathbf{k}\boldsymbol{\rho}} d^2\boldsymbol{\rho}$$

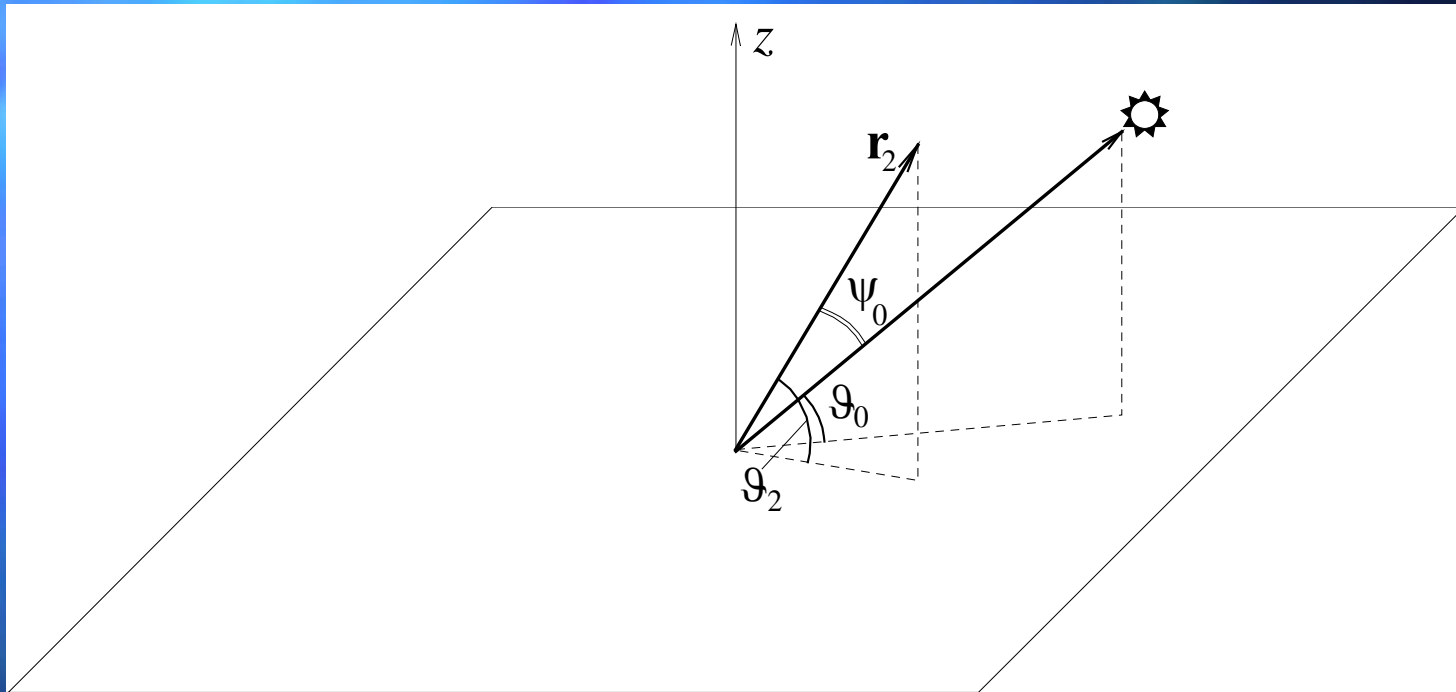
$$\zeta(x, y, t) = \sum_{l=1}^{N_k} \sum_{m=1}^{N_\varphi} A(k_l, \varphi_m) \cos[\omega(k_l)t - k_l x \cos \varphi_m - k_l y \sin \varphi_m + \Psi_{lm}]$$

$$A(k_l, \varphi_m) = \sqrt{2S(k_l, \varphi_m) k_l \Delta k_l \Delta \varphi_m}$$

2. Frame - horizontal plane coordinates recalculate



3. Spectral-angle distribution of sky brightness



Spectral-angle distribution of sky brightness
is dependence between brightness of point on
sky sphere and wavelength

Picture parameters

Main parameters

Parameters

The screenshot shows the 'InputData' dialog box with two tabs: 'Main Data' and 'Advanced Data'. The 'Main Data' tab is active. The 'Picture Parameters' section is highlighted with a dashed box. The 'Nature Parameters' section is also visible. The 'Wind Parameters' section is partially visible. The 'Scene Projection' section is also visible. The 'Advanced Data' tab is partially visible. The 'InputData' dialog box has a title bar with a question mark and a close button. The 'Main Data' tab is selected. The 'Picture Parameters' section includes: 'Number of Pixels: Horizontal (800), Vertical (600)', 'Angle Size of Picture, deg: Horizontal (40), Vertical (30)', 'Height of Camera: (10) m', 'Central Vision Angle: (0) deg', 'Frame Frequency: (20) fps', and 'Number of Frames: (1)'. The 'Nature Parameters' section includes: 'Angle Coordinate: (90) Azimuth, deg', '(2) Declination, deg'. The 'Wind Parameters' section includes: '(5) velocity, m/s', '(20) Direction, deg'. The 'Scene Projection' section includes: 'Linear', 'Square', 'Flat', and 'Cylindrical'. The 'Advanced Data' tab is partially visible. The 'InputData' dialog box has 'OK', 'Cancel', 'Apply', and 'Help' buttons at the bottom.

Picture resolution, in pixels

Vertical and horizontal angles aperture of camera

Camera position high over water-level

Central vision angle of camera

Frequency and number of frames (videoparameters)

Nature Parameters

Main parameters

Parameters

The screenshot shows a software dialog box titled "InputData" with two tabs: "Main Data" and "Advanced Data". The "Main Data" tab is active. It contains several sections of parameters:

- Picture Parameters:**
 - Number of Pixels: Horizontal (800), Vertical (600)
 - Angle Size of Picture, deg. (partially visible)
- Nature Parameters:** (highlighted with a dashed box)
 - Angle Coordinates of Sun:
 - 90 Azimuth, deg.
 - 2 Declination, deg.
 - Wind Parameters:
 - 5 Velocity, m/s
 - 20 Direction, deg.
 - Meteorological Max View: 50 km
 - Height of Aerosol Layer: 0.2 km
 - Angstrom Power: 0.55
 - Season Parameter: 0.3

At the bottom of the dialog are buttons for "OK", "Cancel", "Apply", and "Help".

Spherical coordinates of sun

Wind velocity and direction

Season parameter (specifies reflection of emission from water)

Meteorological length of visibility, High of dissipation aerosol layer, Angstrom power, (specify aerosol dissipation)

Input

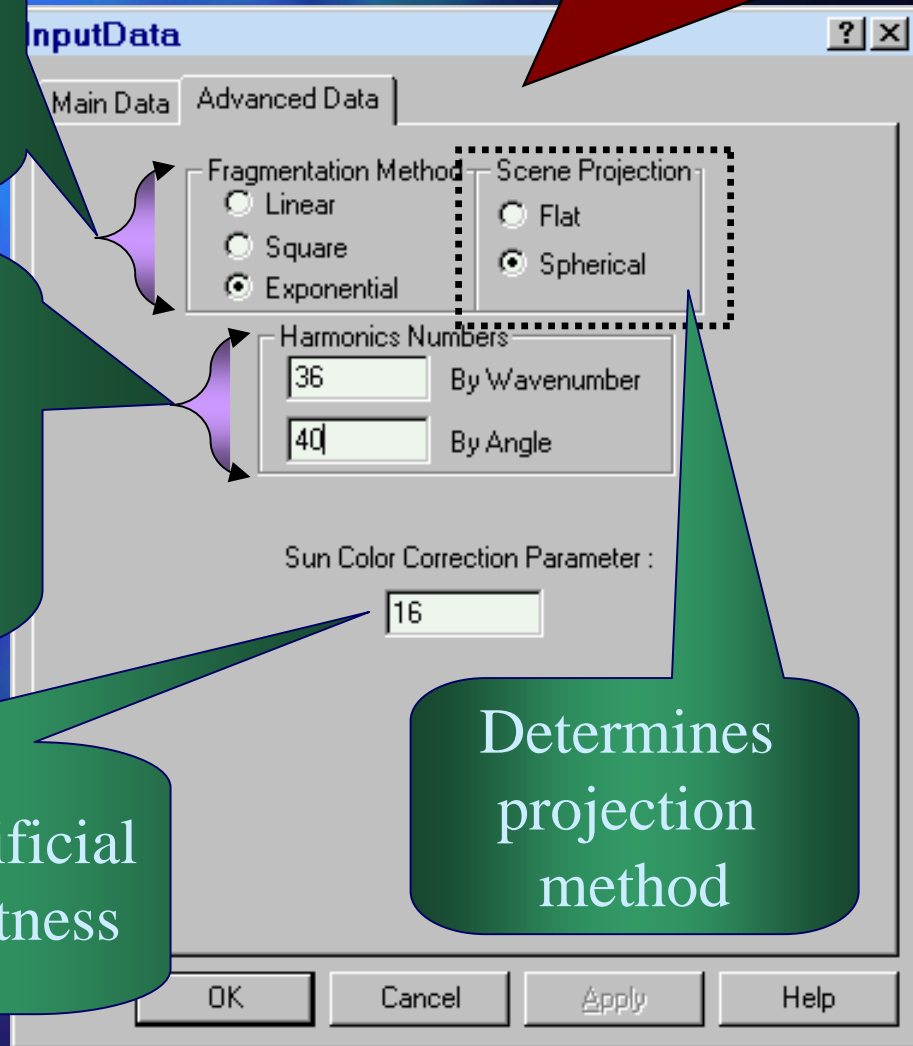
Advanced parameters

Specifies fragmentation method of interval of wave number : linear, square or exponential

Determines numbers of derivations of wave number and azimuth angle intervals (specifies quality of water surface representation)

Parameter regulating artificial increasing of sun brightness

Determines projection method





Fiction art



Some unheeded effects

Clouds



Video samples

