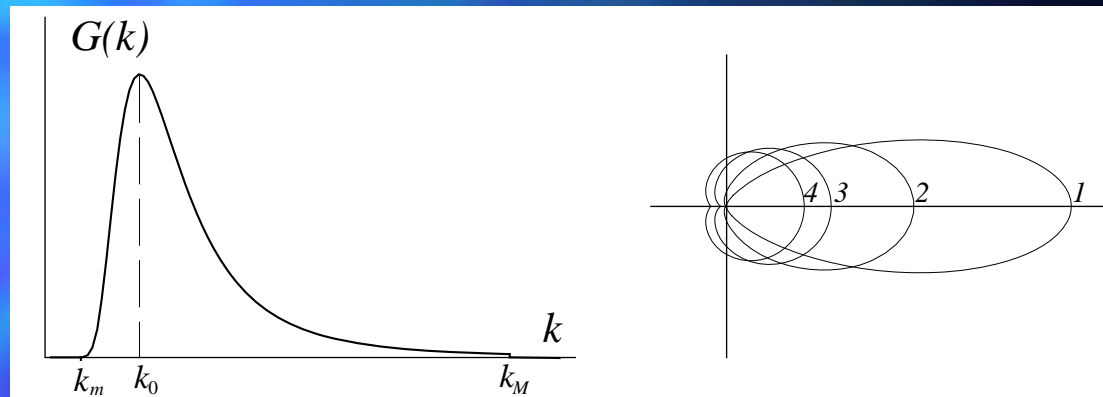


Computer Simulation of Water Surface View

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1. Sea swell simulation

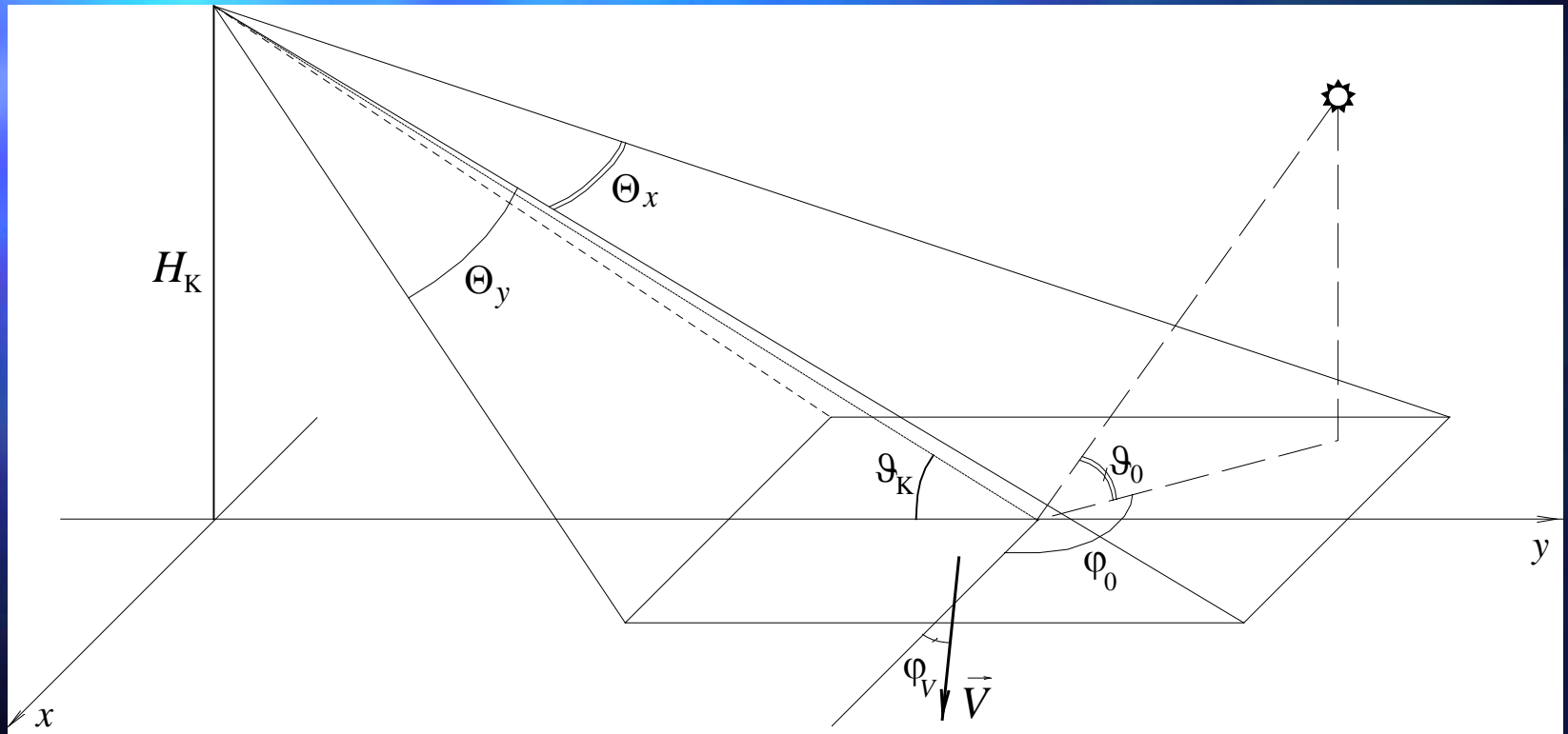


$$S(\mathbf{k}) = \int B(\boldsymbol{\rho}) e^{i\mathbf{k}\boldsymbol{\rho}} d^2\boldsymbol{\rho} = \int \langle \zeta(\mathbf{r}, t) \zeta(\mathbf{r} + \boldsymbol{\rho}, t) \rangle e^{i\mathbf{k}\boldsymbol{\rho}} d^2\boldsymbol{\rho}$$

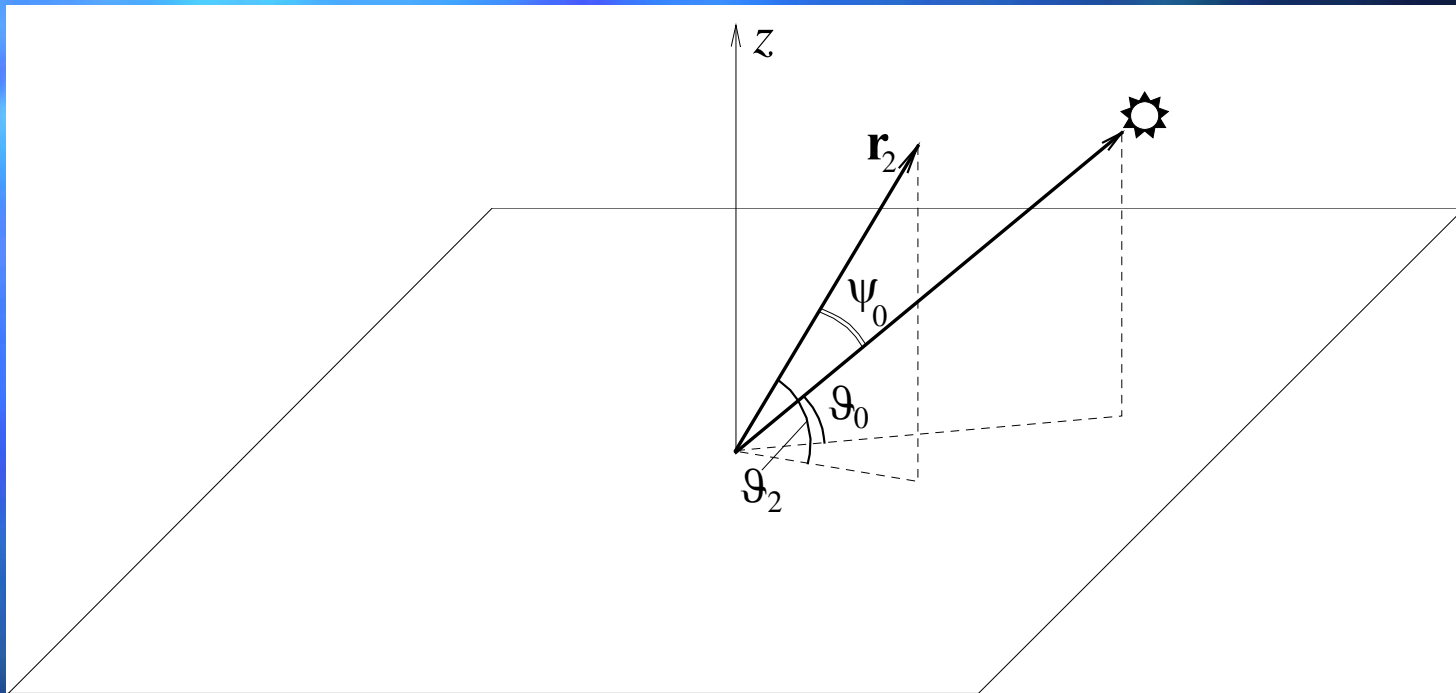
$$\zeta(x, y, t) = \sum_{l=1}^{N_k} \sum_{m=1}^{N_\varphi} A(k_l, \varphi_m) \cos[\omega(k_l)t - k_l x \cos \varphi_m - k_l y \sin \varphi_m + \Psi_{lm}]$$

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

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 'OK', 'Cancel', 'Apply', and 'Help' buttons are 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)

Section	Parameter	Value	Unit
Picture Parameters	Number of Pixels: Horizontal	800	
	Number of Pixels: Vertical	600	
	Angle Size of Picture, deg: Horizontal	40	deg
	Angle Size of Picture, deg: Vertical	30	deg
	Height of Camera	10	m
	Central Vision Angle	0	deg
Nature Parameters	Angle Coordinate: Azimuth	99	deg
	Angle Coordinate: Declination	2	deg
Wind Parameters	Wind Velocity	5	m/s
	Wind Direction	20	deg
Advanced Data	Height of Aerosol Layer	0.2	km
	Angstrom Power	0.55	
Videoparameters	Frame Frequency	20	fps
	Number of Frames	1	

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 input fields:

- Picture Parameters:**
 - Number of Pixels: Horizontal (800), Vertical (600)
 - Angle Size of Picture, deg.: (empty)
- 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 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

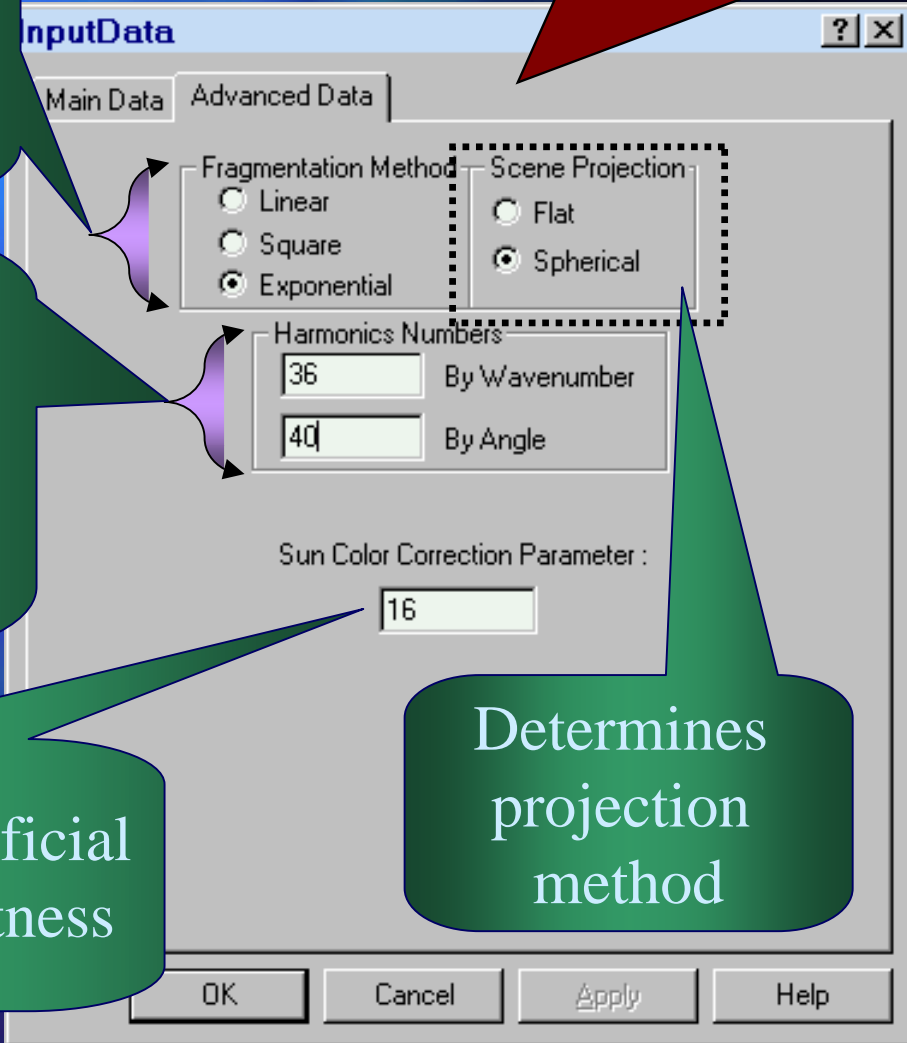
Advanced parameters

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

