

**PRIMARY PRODUCTION SOFTWARE
DEMONSTRATION**

Louisa Watts

**Software and handbook presently available in Dos
version which can be downloaded from the IOCCG
website:**

<http://www.ioccg.org>

**Demonstration will be of Windows version of software.
Enquiries on availability made to:**

**Dr. Trevor Platt, Biological Oceanography Division,
Bedford Institute of Oceanography, PO BOX 1006,
Dartmouth, Nova Scotia. B2Y 4A2**

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The Help File – F1

**This help file is divided into 12
sections:**

- 1- Introduction and General Use**
- 2- Description of the Package**
- 3- Entering or Loading Data**
- 4- Creating and Saving Data Files**
- 5- Processing Data**
- 6- Viewing Results**
- 7- Viewing the Log**
- 8- Fitting Data**
- 9- Viewing the Help File**
- 10- Viewing the About Box**
- 11- Exiting the Application**
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Description of the Package

Divided into five components, arranged in tabs in the main window.

- Surface Irradiance
- Depth-Averaged Concentration
- Daily Production - Analytical
- Daily Production - Numerical
- Biomass and P-I Fit

Surface Irradiance: The Surface Irradiance component is used to compute irradiance figures depending on geographical

position and time of year.

Input by user: latitude and longitude in decimal degrees, and day of the year.

Suggested input:

Latitude (deg N): 20

Longitude(deg E): 55

Day no (27th September): 270

ADD RECORD

RUN

EXIT BOX THAT APPEARS

SAVE DATA? NO

Output by the software:

day length (D), total daily surface irradiance (I_T), and peak (local noon) surface irradiance (I_{0m}) in W m⁻². This is computed according to Bird's clear sky spectral irradiance model (1984), with adjustments by Sathyendranath and Platt (1988).

*Data is saved in DATA directory as file called *.out If you wish to keep it, it will need renaming*

Depth-Averaged Concentration:

The Depth-Averaged Concentration component enables the user to compute the average concentration (<C>) over a specified layer of the water-column.

The average concentration (mg Chl/m³) is computed by numerically integrating the gaussian distribution function

Suggested input:

- peak depth in meters (Zm)= 10
- baseline (Bo) in mg Chl/m³ = 1
- peak height parameter above baseline in mg Chl/m² (h) = 26
- lower and upper depth (m) = 0 and 100
- Peak Width (s) in m =7

ADD RECORD

RUN

EXIT BOX THAT APPEARS

SAVE DATA? NO

MAKE A NOTE OF THE RESULTS

Data is saved in DATA directory as *.out file

If you wish to keep it, it will need renaming

Biomass and P-I Fit:

User chooses from 4 different types of fit: shifted Gaussian profile; Gaussian profile (baseline=0); Constant biomass profile; P-I curve

Click on to desired fit

Load your data from a data file (see examples below).

(These must be in text format and saved as *.dat They must not have headers; just data)

Suggested input:

Click on shifted Gaussian model

Click on LOAD DATA

Go into C:\WINOP\DATA and open file called Biomassprofile

PLOT DATA (may have to look behind main window to see plot)

ADD MODEL

PERFORM FIT

SAVE DATA? NO

Output: peak depth in meters (Zm); baseline (Bo) in mg Chl/m³; peak height parameter above baseline in mg Chl/m² (h); Peak Width (s) in m; height of peak above baseline (H)

Data are saved in Winop\data\default – file needs renaming if saving required

Biomass and P-I Fit:

File/new

Save data? No

Click on Photosynthesis-Irradiance relation

Click on LOAD DATA

Go into C:\WINOP\DATA and open file called
SHLF_mons_sh_PI

PLOT DATA (may have to look behind main window to
see plot)

ADD MODEL

PERFORM FIT

SAVE DATA? NO

Output: Assimilation number (mg C(mg Chl)⁻¹h⁻¹)

Initial slope (a^B) mg C (mg Chl)⁻¹h⁻¹ W m⁻²

MAKE A NOTE OF THE RESULTS

Data are saved in Winop\data\default – file needs renaming if saving
required

Daily Production - Analytical

Suggested input:

Latitude: 20 (deg N)

Longitude: 55 (deg E)

Day no: 270 (27th September)

Assimilation number (mg C(mg Chl)⁻¹h⁻¹): Use output
from fitting P-I curve

Initial slope (a^B) mg C (mg Chl)⁻¹h⁻¹ W m⁻²: Use output from
fitting P-I curve

Biomass: Use output from Depth Averaged Concentration

Attenuation (K) m⁻¹ = 0.1

Lower bound = 0m

Upper bound = 100m

ADD RECORD

RUN

EXIT BOX THAT APPEARS

SAVE DATA? NO

Software output: The inputs; daylength (h)
normalised midday irradiance (I^{*m}); Daily PP (P_ZT)
(mg C m⁻²)

MAKE A NOTE OF THE RESULTS

Data are saved in Winop\data\default – file needs renaming if saving
required

Daily Production - NUMERICAL

Suggested input:

Bottom Depth (m) : 1000

Latitude (deg N): 20

Longitude (deg E) : 55

Day no (27th September): 270

Assimilation number (mg C(mg Chl)⁻¹h⁻¹ : Use output from fitting P-I curve

Initial slope (a^B) mg C (mg Chl)⁻¹h⁻¹ W m⁻²:Use output from fitting P-I curve

peak depth in meters (Zm)= 10

baseline (Bo) in mg Chl/m³ = 1

peak height parameter above

baseline in mg Chl/m² (h) = 26

Peak Width (s) in m =7

Cloud cover (%): 20

Ay(440)/Ac(440): = 0.3

ADD RECORD

RUN

EXIT BOX THAT APPEARS

SAVE DATA? NO

Software output: The inputs; Daily PP(P_ZT) (mg C m⁻²); Photic Zone depth (Zp)

MAKE A NOTE OF THE RESULTS (Data are saved in Winop\data\default – file needs renaming if saving required)