

Course outline

How does an NPTEL online course work?

Week 0 :

Week 1:

Week 2:

Week 3 :

- Lecture 11 : RS of Primary Productivity – Introduction and Overview
- Lecture 12 : RS of Primary Productivity – VIs and LUE
- Lecture 13 : RS of Primary Productivity – Process Based Models
- Lecture 14 : RS of Primary Productivity Methods - SIF
- Lecture 15 : RS of Primary Productivity Methods - LST, ML, Inversion/ Passive RS

Week 3 Lecture Material

Quiz: Week 3 : Assignment 3

Week 3 Feedback Form

Week 4 :

Assignment Solution

Download Videos

Live Interactive Session

Week 3 : Assignment 3

The due date for submitting this assignment has passed.

Due on 2021-08-25, 23:59 IST.

As per our records you have not submitted this assignment.

A. State True or False

1) Remote sensing data acquired in a broad wavelength range (visible, infrared, and microwave) of the electromagnetic spectrum are used to estimate carbon fluxes and/or stocks. **1 point**

- a. True
 b. False

No, the answer is incorrect.
Score: 0

Accepted Answers:
a. True

2) Mathematically for NDVI, the sum and difference of the two spectral channels contain the same information as the original data, but the (or Normalized) Difference alone, carries only part of the Initial information **1 point**

- a. True
 n. False

No, the answer is incorrect.
Score: 0

Accepted Answers:
a. True

3) Vegetation Indices measures more of photosynthetic capacity than primary productivity **1 point**

- a. True
 b. False

No, the answer is incorrect.
Score: 0

Accepted Answers:
a. True

4) Some models incorporate CO₂ fertilization to realise the reduction effects on primary production **1 point**

- a. True
 b. False

No, the answer is incorrect.
Score: 0

Accepted Answers:
b. False

5) LUE models are usually production efficiency models **1 point**

- a. True
 b. False

No, the answer is incorrect.
Score: 0

Accepted Answers:
a. True

6) SIF study is based on EM signal absorbed in Red and far-Red portions by green leaves after excitation by solar radiation **1 point**

- a. True
 b False

No, the answer is incorrect.
Score: 0

Accepted Answers:
b False

7) SIF has potential to indicate actual plant photosynthetic activity opposed to potential photosynthetic activity **1 point**

- a. True
 b. False

No, the answer is incorrect.
Score: 0

Accepted Answers:
a. True

8) The light penetration and fluorescence reabsorption within a leaf or canopy is independent of wavelength **1 point**

- a. True
 b. False

No, the answer is incorrect.
Score: 0

Accepted Answers:
b. False

9) The remote sensing based SIF is assessed using state-of-the-art algorithms to distinguish emission from reflected and/or scattered ambient light- as Red to far-Red SIF emission is detectable non-invasively! **1 point**

- a. True
 b. False

No, the answer is incorrect.
Score: 0

Accepted Answers:
a. True

10) The Photosynthesis modules of some DGVMs are being extended to incorporate a consistent modeling of SIF **1 point**

- a. True
 b. False

No, the answer is incorrect.
Score: 0

Accepted Answers:
a. True

11) As a Thumb Rule, 70% data used for Model Training and 30% data used for Model Validation in Machine Learning models **1 point**

- a. True
 b False

No, the answer is incorrect.
Score: 0

Accepted Answers:
a. True

12) The inversion approach provides coarse scale CO₂ fluxes **1 point**

- a. True
 b. False

No, the answer is incorrect.
Score: 0

Accepted Answers:
a. True

13) Shadow Fraction is quantified using Spectral mixture analysis (SMA) for medium resolution data **1 point**

- a. True
 b. False

No, the answer is incorrect.
Score: 0

Accepted Answers:
a. True

B. Fill in the Blanks

14) A part of the C fixed by plant is returned to the atmosphere through respiration, is called _____. **1 point**

- a. Autotrophic Respiration
 b. Heterotrophic Respiration
 c. Ecosystem Respiration
 d. None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
a. Autotrophic Respiration

15) Ecosystem Respiration can also be estimated using LST observations from the _____ infrared wavelength **1 point**

- a. Near
 b. Shortwave
 c. Middle
 d. Thermal

No, the answer is incorrect.
Score: 0

Accepted Answers:
d. Thermal

16) Column CO₂ concentrations data have been obtained from _____ satellite **1 point**

- a. SCIAMACHY- Envisat
 b. TANSO-FTS - GOSAT
 c. TROPOMI-Sentinel 5 P
 d. All of the Above

No, the answer is incorrect.
Score: 0

Accepted Answers:
d. All of the Above

17) Which of the statement is NOT correct Vegetation Indices _____ **1 point**

- a. Combine Chlorophyll-Sensitive Red absorbing band with Leaf and Canopy Structure-sensitive, NIR band
 b. Minimize sensitivity to plant biophysical parameters preferably with linear response!
 c. Normalize the external effects of sun angle, viewer angle, cloud and atmosphere
 d. Should be coupled to key biophysical parameters such as LAI and primary production

No, the answer is incorrect.
Score: 0

Accepted Answers:
b. Minimize sensitivity to plant biophysical parameters preferably with linear response!

18) The Photosynthetically Active Radiation (PAR) range is usually _____ **1 point**

- a. 0.2 - 0.7 μm
 b. 0.3 - 0.7 μm
 c. 0.4 - 0.7 μm
 d. 0.3 - 0.8 μm

No, the answer is incorrect.
Score: 0

Accepted Answers:
c. 0.4 - 0.7 μm

19) Remote sensing data play a significant role in the light use efficiency (LUE) approach by providing information on **1 point**

- a. Vegetation type
 b. Growth status
 c. Environmental conditions
 d. All of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
d. All of the above

20) Process Based Models Simulate _____ Fluxes **1 point**

- a. Carbon
 b. Water
 c. Energy
 d. All of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
d. All of the above

21) The vegetation index and Flux Tower based measurement relationships for primary productivity estimate vary with _____ **1 point**

- a. Biomes
 b. Timescales
 c. BRDF effect
 d. All of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
d. All of the above

22) Which of the following models provide LAI as one of the outputs **1 point**

- a. CASA
 b. SiB2
 c. BIOME-BGC
 d. CENTURY

No, the answer is incorrect.
Score: 0

Accepted Answers:
c. BIOME-BGC

23) SIF study involves _____ of photosynthesis at leaf and/ or sub-cellular level **1 point**

- a. Organization
 b. Functioning
 c. Physiology
 d. All of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
d. All of the above

24) Which of the following is not correct Land Surface Temperature is _____ **1 point**

- a. a measure of radiative skin temperature of the land surface
 b. measured in the direction of Remote Sensor
 c. estimated from Top-Of-Atmosphere brightness temperature
 d. All of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
d. All of the above

25) Inverse modeling _____, and generates predicted CO₂ concentration **1 point**

- a. Identifies C sources
 b. Identifies C sinks
 c. Coupled with a planetary transport Model
 d. All of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
d. All of the above