**(01) .-** What requirements must the data of the Argo International Program meet to be accepted by the receiving centers?

to)    They should include temperature, salinity, and pressure.

b)    They should include temperature, salinity, pressure, and quality controls.

**c)**    **They must include temperature and pressure, quality controls, and be freely available.**

d)    They must include temperature, salinity and pressure, and the data is distributed freely and for free.

**(02) .-** The coverage objective of the Argo profilers fleet, as established by the *Argo Science Team* at the beginning of the program was:

**to)**   **An average coverage of one Argo buoy every 3 degrees in longitude and latitude.**

b)    Have around 10,000 operational buoys regularly distributed in the global ocean.

c)     Have buoys spaced on an average mesh of 50x50 km.

d)    Double the number of buoys every 3 years until 2020.

**(03) .-** In the so-called main mission ( *core* ) of the Argo program, the precision objective of temperature, pressure and salinity measurements is:

**to)**   **0.002 ° C in temperature, ± 2.4 dbar in pressure and ± .01 in salinity.**

b)    0.002 ° C in temperature, ± 1.0 dbar in pressure and ± .01 in salinity.

c)     0.002 ° C in temperature, ± 1.0 dbar in pressure and ± .003 in salinity.

d)    0.002 ° C in temperature, ± 2.4 dbar in pressure and ± .004 in salinity.

**(04) .-** In relation to the Argo buoys currently deployed in the ocean, that statement is not correct.

to)    They measure salinity, temperature and depth.

b)    Some are making salinity measurements at depths greater than 2000m.

**c)**    **All buoys have an Argos transmission system.**

d)    Some buoys have incorporated particulate organic carbon measurement sensors.

**(05) .-** Which of the following statements in relation to the Argo program is not correct:

**to)**   **The goal of launching 2000 buoys is about to be reached.**

b)    It has among its objectives the systematic measurement of the ocean and the assimilation in present time of the data in models.

c)     Coverage is one buoy every 3 degrees.

d)    The data obtained by the Argo buoys are used in research.

**(06) .-** Which of the following variables is not included among those accepted in the extension to biogeochemical parameters of the Argo program:

**to)**   **Phosphate.**

b)    Dissolved oxygen.

c)     Nitrate.

d)    pH.

**(07) .-** The *Argo Project Office* :

to)    It is an Argo program management office present in each country and dependent on national programs.

**b)**   **It is an Argo program management office that provides support and infrastructure independent of national programs.**

c)     It is an entity that finances the Argo program.

d)    It is an entity that evaluates national programs.

**(08) .-** In relation to Argo's coordination and management bodies.

**to)**   The *Argo Project Office* is located at the University of California, San Diego.

**b)**   **The Argo Information Center is located in Brest.**

c)     The Argo Steering Team is located at the University of California, San Diego.

d)    The *Argo Data Management Team* is located at the headquarters of the *World Metereological Organization* , in Geneva.

**(09) .-** The regional and global data acquisition centers of the Argo observation program are financed by:

to)    The *Argo Information Center* , which depends on the international oceanographic commission.

b)    Each country that joins Argo undertakes to finance its national program as part of the meteorological services, and the corresponding part of the regional and global centers.

c)     UNESCO finances regional and global centers, while national centers are financed by each country.

**d)**   **Each country freely chooses how much and how it finances its participation in the Argo program.**

**(10) .-** The Argo program uses the NetCDF format for data distribution. From this format it can be said:

to)    It is a non-proprietary format, developed by IFREMER for Argo but only used in the marine science community.

**b)**   **It is a non-proprietary format, developed mainly by UNIDATA, which is a community of users of the American Corporation of Universities for Research in Atmospheric Sciences (UCAR).**

c)     It is part of the Java programming language, and therefore it is no longer proprietary, as SUN develops it under the GNU General Public License.

d)    None of the above statements is true.

**(11) .-** In the distribution of data from the Argo program in NetCDF format through FTP, the files are grouped as follows:

to)    There is a unique file for each buoy, organized by its serial number, with the following name: Ar\_XXXXXXX.nc, whereXXXXXXX is the serial number.

b)    There is a unique file for each month: Ar\_mmyyyy.nc, where mm is the month and yyyy the year.

**c)**    **The data is grouped geographically, with a file for each day of the year according to the basin, or by data processing center, with a directory for each buoy.**

d)    None of the above statements is true.

**(12) .-** The Argo program aims to disseminate the observed data, freely and for free, with a control that is called in present time ( *Real Time* ), within a period of:

to)    1 hour

b)    6 months, with re-calibration every year.

**c)**    **12 hours.**

d)    6 hours, as atmospheric data.

**(13) .-** In the data distribution of the Argo program, the TESAC format is used mainly for:

***to)***   **The distribution of data in the *Global Telecommunication System***

b)    Data distribution via FTP

c)     Sending the data by email to the national atmospheric forecasting centers.

d)    Sending the data by email to the national Argo centers.

**(14) .-** In the data distribution of the Argo program, the BUFR format is used mainly for:

to)    The distribution of data by FTP.

b)    Sending the data by email to the national atmospheric forecasting centers.

c)     It is an obsolete format, which was discontinued in 2000, by resolution of the Argo SteertingTeam.

***d)***   **The distribution of data in the *Global Telecommunication System.***

**(15) .-** The aim of the Argo program is to disseminate the observed data, freely and for free, with a control called delayed time ( *Delayed Mode* ), within a period of:

to)    1 hour

**b)**   **6 months, with re-calibration every year.**

c)     24/48 hours.

d)    6 hours, as atmospheric data.

**(16) .-** During the quality control process in present time, quality flags are assigned to the data of all the sensors of the Argo buoys. Which of the following statements is true.

**to)**   **In general, a salinity measurement with PSAL\_QC = '4' is erroneous data that, in principle, cannot be adjusted. However, *delayed mode operators* can evaluate the quality and tunability of this bad data if they have a reason to do so.**

b)    In general, the float salinity with PSAL\_QC = '0' is erroneous data that, in principle, cannot be adjusted. However, *delayed mode operators* can evaluate the quality and tunability of this erroneous data if they have a reason to do so.

c)     In general, the float salinity with PSAL\_QC = '1' is erroneous data that, in principle, cannot be adjusted. However, *delayed mode operators* can evaluate the quality and tunability of this erroneous data if they have a reason to do so.

d)    None of the above statements is true.

**(17) .-** During the control that is called in delayed time ( *Delayed Mode* ), the method used in Argo is based on the reference:

**to)**   **Owens and Wong, 2008.**

b)    Roemmich and Gilson, 2008.

c)     Send and Klein, 2002.

d)    There is no single method, each time-delayed control officer uses his own method.

**(18) .-** For the so-called *core* mission of the Argo program, the following configuration is the most common:

**to)**   ***Parking depth* at 1000m and profiles every 10 days.**

b)    *Parking depth* at 2000m and profiles every 10 days.

c)     *Parking depth* at 2000m and profiles every 5 days.

d)    *Parking depth* at 1000m and profiles every 5 days.

**(19) .-** The main data transmission systems used in Argo are:

**to)**   **Iridum and Argos.**

b)    GPS and Obercomm.

c)     GLONASS and Galileo.

d)    IridiumSBD and RUDICS.

**(20) .-** Argo profiling buoys mostly make observations of temperature and conductivity as a function of pressure with a sensor:

to)    SBE61.

b)    RBR Concerto.

c)     SBE37.

**d)**   **SBE41.**

**(21) .-** Argo's original design excluded icy areas, regional seas and targeted a fleet with the next number of active profilers.

to)    2000

b)    2500

**c)**    **3000**

d)    None of the previous are true.

**(22) .-** In addition to maintaining what is called the main mission ( *core* ), there is a plan to expand Argo in the western border currents, with the following characteristics:

to)    Increase the observation depth to 4000m.

b)    Increase the frequency of the profiles to one every 5 days.

c)     Provide Argo buoys with a high resolution temperature sensor in the mixing layer.

**d)**   **Double the spatial coverage.**

**(23) .-** In addition to maintaining what is called the main mission ( *core* ), there is a plan to expand Argo below 2000m, with the following characteristics:

to)    Increase the observation depth to 4000m, the average depth of the ocean.

b)    Increase the frequency of the profiles to one every 5 days.

**c)**    **Deploy some 1,250 buoys with the capacity to observe the deep ocean.**

d)    Increase spatial coverage to a deep Argo buoy every 3 degrees in longitude and latitude.

**(24) .-** In the extension of the Argo observation network below 2000 meters, the observations of temperature and conductivity as a function of pressure are carried out with a sensor:

**to)**   **SBE61 and SBE41.**

b)    Indronaut 626.

c)     SBE37.

d)    The extension of Argo below 2000 m has not yet started.

**(25) .-** In addition to maintaining the main mission ( *core)* , there is a plan to expand Argo to biogeochemical observations. Which of the following statements is true:

to)    By 2020, the *Argo Steering Team* has planned that at least a quarter of the Argo profiling buoys will have the 4 main biogeochemical sensors: chlorophyll, oxygen, turbidity and pH.

**b)**   **During 2018, the Intergovernmental Oceanographic Commission (IOC) approved a pilot program to extend the Argo program in 6 new parameters.**

c)     During 2018, the IOC denied a pilot program to extend the Argo program in 6 new parameters, due to inferences with the rights of coastal states under the Law of the Sea.

d)    There is no intention, on the part of the *Argo Steering Team* , to extend the Argo program to biogeochemical observations.

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