Recovery of Troubles in CReSS

1 Abnormal terminations in execution of solver.exe

1.1 Immediate stop of solver.exe

When solver.exe stops the execution abnormally, the massage as

```
This program stopped abnormally.
```

will be outputted at the end of standard output and no core will be produced. In the most cases, one or more parameters in the user configuration file `user.conf` are not acceptable or wrong.

1. **In case stopped by `rdname`:** solver.exe stops execution immediately with the following messages, after solver.exe started. In this case, reading namelist variables is failed.

   Messages:

   ```
   Now the program, solver start.

      error: subroutine, rdname;
        Can not read out the data from the file of unit number  5.

   This program stopped abnormally.
   ```

   Reasons: Syntax errors or unacceptable statements of variable are present in the user configuration file `user.conf` which are read in the standard input (unit 5). For example, double periods in a variable (such as 10.0.e0).

   Recover: Correct the wrong statement in user.conf" and start the solver again.

2. **In case stopped by rdname":** Although some parameters in the user configuration file user.conf" which used in compilation are changed, the same load module is used. Some parameters has dependency between compilation and execution. They must be same.

   Messages:

   ```
      error: subroutine, rdname;
        Array dimension(s) is/are chenged.
        Please recompile again.
   ```

   Reasons: Discrepancy of dimension parameters are found in the user configuration file.

   Recover: Following the Messages, recompile with the user.conf" and run again.

3. **In case stopped by rdname":** The parameter of the termination time of calculation etime" is wrong in user.conf" and the solver stops.

   Messages:

   ```
   Now the program, solver start.

     error: subroutine, rdname;
       The namelist setting is wrong.


   This program stopped abnormally.
   ```

   Reasons: The termination time etime" must be an integer to be divided by the time interval of the large time step dtbig".

   Recover: Ether parameter etime" or dtbig" is corrected and run again. In this case, re-compilation is not necessary.

4. **In case stopped by rdname":** The time intervals of the large and small time steps are not correctly determined and the solver stops.

   Messages:

   ```
   Now the program, solver start.

     error: subroutine, rdname;
       The namelist setting is wrong.


   This program stopped abnormally.
   ```

   Reasons: The dtbig" must be an integer to be divided by dtsml".

   Recover: Correct the variables of dtbig" or dtsml" and run again.

5. **In case stopped by vint13d:** When solver.exe produces the initial field using a sounding profile, solver.exe stops the execution owing to a unacceptable setting.

   Messages:

   ```
     error: subroutine, vint13d;
       Can not go on with this calculation.
   ```

   Reasons: The top height of the sounding ****.sounding.txt" is lower than that of the model which is configured in user.conf".

   Recover: Provide higher data in ****.sounding.txt" of make lower the top height of the model in user.conf".

6. **In case stopped in vspdmp"**: solver.exe stops the execution owing to an inconsistency of the configuration of the upper sponge layer.

   Messages:

   ```
   error: subroutine, vspdmp;
     Can not go on with this calculation.
   ```

   Reasons: The height of the upper sponge layer is higher than that of the model top height.

   Recover: Adjust the zsplow" to be the sponge layer lower than the top height of the model. In general, the sponge layer is one-third of the total height of the model from the top.

7. **In case stopped by outgeo"**: solver.exe failed to output the geographic information file *****.geography.bin" at the initial time and the execution stops.

   Messages:

   ```
   Now the program, solver start.

     ##### Infomation #####

     i/o: subroutine, outgeo;
       Open the file, prof14.geography.bin
       with unit number 11.

     error: subroutine, outgeo;
       Can not read in the data to the file of unit number 11.

   This program stopped abnormally.
   ```

   Reasons: There are some reasons for this error. If the storage space is not sufficient, this error could occur. In the case of incorrect configuration of wlngth =4" instead of wlngth =1", the same error occurs. In this case, the unformatted direct access binary data become larger than the defined length in the open statement. If wlngth =4" instead of wlngth =1" incorrectly, this error will not occur while the output data will be wrong.

   Recover: Remove the reasons of the error and run again.

1.2   Abnormal termination during computation

1.3   Abnormal termination by OS

Most cases stopped by OS are

1. over flow in the calculation of the floating,

2. and over flow of data outputs.

In most cases, over flow of the floating calculation due to inconsistency to the CFL condition.

2 Abnormal results

Even through the computation is normally terminated, there are some reasons to make an abnormal result. The main reasons are

1. The initial data is not appropriate.

2. The configuration in the user configuration file is not appropriate.

3. Noise increases due to an inconsistency in the CFL condition.

4. Inappropriate use of a display application.

2.1 Wrong parameters in user.conf

1. **Error in counting real** Counting the length of real number is dependent on machine in the unformatted direct access. The number is one if counted by data number and 4 if counted by bytes.

   Results: In most case, calculation will be stopped normally while the volume of output data will be wrong. If the data is displayed, it will be abnormal.

   Recover: Re-execution after correction of wlngth.

2.2 Wrong usage of the graphic applications

1. **Discrepancy of endian** There are two type of expression of real number:little endian and big endian, which are depend on machine. Series of PC and Compaq Workstation take the little endian and most mainframes take the big endian.

   Results: Execution is stopped normally and the size of data is correct while the display of result will be abnormal.

   Recover: Chose the correct endian.

   Notes: If the endian of the input data is different from the endian of the program, the execution will be stopped abnormally. In this case, re-compile of the program is necessary. Most compilers have an option to switch the endian of the program.

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3 Abnormal termination in execution of gridata.exe

3.1 Immediate stop of gridata.exe after start

If gridata.exe stops abnormally, the message

```
This program stopped abnormally.
```

will be outputted at the end of the standard output and a core will not be produced. In most case, wrong or inappropriate parameters are included in the user configuration file "user.conf".

1. **Stop at rdname:** The gridata.exe stops execution immediately with the following message after it is executed. In this case, it failed to read the namelist parameters.

   Messages:

   ```
   Now the program, gridata start.

     error: subroutine, rdname;
        Stopped processor element number is #0000.
        The namelist setting is wrong.

   This program stopped abnormally.
   ```

   Reasons: Wrong or inappropriate parameters are included in the user configuration file "user.conf".

   - Wrong boundary condition. In the case to use gridata.exe, the cyclic boundary condition (wbc, ebc, nbc, sbc =1) is not allowed.

   Recover: Correct the wrong parameters in user.conf and re-execution.