Prepare TraCE-21ka monthly data as LPJ-GUESS drivers
05.12.2019 Debugging summary – Antoine Champreux

Problemes

1) process stopping after *prepare_trace_for_lpjguess.py* Ln304 – Joining output into monolithic files.

```
[35mJoining output into monolithic files.[0m
[36mSkipping: './trace_corrected/trace_neotropics_modern_corv2/trace_999999999999999999--999999999999999999_.nc'[0m
[36mSkipping: './trace_corrected/trace_neotropics_modern_corv2/trace_999999999999999999--999999999999999999_.nc'[0m
[36mSkipping: './trace_corrected/trace_neotropics_modern_corv2/trace_999999999999999999--999999999999999999_.nc'[0m
```

- prepared 100 year files generated
- not concatenning files (neither CO_2, nor gridlist file)

2) negative FSDS values ($W.m^2$)

Debugging

1)Partially fixed. Comparisons with the previous version: variable name not read.

- *var* is no longer extracted in the *netcdf_metadata.py* Ln10 *get_metadata_from_trace_file*
- *var* is now given as an argument of *filenames.py* Ln161 *derive_new_trace_name*
  see also *prepare_trace_for_guess.py* Ln254 *os.path.basename(derive_new_trace_name(f,* ***var****))*
- but *var* is not an argument of *filenames.py* Ln184 *derive_new_concat_trace_name*
  which uses the function *get_metadata_from_trace_files*, which also uses the function *get_metadata_from_trace_file*

I came back to the previous version regarding these 2 functions (*get_metadata_from_trace_file, derive_new_trace_name).*

If I keep the heap from the previous version, now the script succeeds to generate the concatenned files, but is still skipping tasks before starting the process. The FSDS file is produced properly, but under the variable name CLDTOT (is that why Wolfgang had changed it?). Hypothesis: The function *derive_new_concat_trace_name* should probably be modified so it can have access to the variable names.

prepare_trace_for_guess.log

```
[35mJoining output into monolithic files.[0m
[36mSkipping: './trace_corrected/trace_neotropics_modern_corv2/trace_999999999999999999--999999999999999999_.nc'[0m
[36mSkipping: './trace_corrected/trace_neotropics_modern_corv2/trace_999999999999999999--999999999999999999_.nc'[0m
[36mSkipping: './trace_corrected/trace_neotropics_modern_corv2/trace_999999999999999999--999999999999999999_.nc'[0m
[33mConcatenating files:[0m
[33m  ./trace_corrected/trace_neotropics_modern_corv2/trace_21601-21700_FSDS.nc[0m
[33m  ./trace_corrected/trace_neotropics_modern_corv2/trace_21801-21900_FSDS.nc[0m
[33m  ./trace_corrected/trace_neotropics_modern_corv2/trace_22001-22040_FSDS.nc[0m
[33m  ./trace_corrected/trace_neotropics_modern_corv2/trace_21701-21800_FSDS.nc[0m
[33m  ./trace_corrected/trace_neotropics_modern_corv2/trace_21901-22000_FSDS.nc[0m
[32mCreated file './trace_corrected/trace_neotropics_modern_corv2/trace_21601-22040_CLDTOT.nc'.[0m
[33mConcatenating files:[0m
[33m  ./trace_corrected/trace_neotropics_modern_corv2/trace_22001-22040_PRECT.nc[0m
[33m  ./trace_corrected/trace_neotropics_modern_corv2/trace_21901-22000_PRECT.nc[0m
[33m  ./trace_corrected/trace_neotropics_modern_corv2/trace_21601-21700_PRECT.nc[0m
[33m  ./trace_corrected/trace_neotropics_modern_corv2/trace_21701-21800_PRECT.nc[0m
[33m  ./trace_corrected/trace_neotropics_modern_corv2/trace_21801-21900_PRECT.nc[0m
```

Once the heap cleaned, it does not succeed. The script reads the first variable of the files. However, CLDTOT is the first variable in the FSDSCL input file, and followings. Then, variables are mixed, causing the bug.

Changes summary.
prepare_trace_for_guess.py Ln254. Delete ",var".
filenames.py Ln161. Delete ", var".
filenames.py Ln179. Insert "var = metadata['variable']"
netcdf_metadata.py Ln36 + Ln38. Insert see below.

```
# Get variable name:
stdout = subprocess.run(['cdo', 'showname', trace_file],
                        capture_output=True, encoding='utf-8').stdout
var = stdout.split()[0]  # Take the first variable.
return {'first_year': int(time_range[0]),
        'last_year': int(time_range[1]),
        'variable': var}
```

2) fixed. *calculate_fsdscl.py* Ln51. Parenthesis missing in the calculation, numerator.

- original version

```
script = 'FSDSCL = FSDS - FSDSC * (1 - CLDTOT) / CLDTOT'
```

- Updated version

```
script = 'FSDSCL = (FSDS - FSDSC * (1 - CLDTOT))/ CLDTOT'
```