

# PySPEDAS

## Fix & Migration Guide

Version 1.x → Version 2.x

*How to Update Your Scripts to Work with PySPEDAS 2.x*

### Who is this guide for?

Anyone who wrote Python scripts using PySPEDAS version 1.x and now wants to run them with the newly installed PySPEDAS 2.x. This guide tells you exactly what to change, why it needs changing, and shows you step-by-step how to do it — with zero confusion.

### Why do scripts break?

PySPEDAS 2.x reorganised how missions (Wind, THEMIS, MMS, etc.) are accessed. The old shortcut paths no longer exist. Also, the data store moved inside `pyspedas` itself, so `get_data` must now be imported from `pyspedas`, not from `pytplot`.

### At a Glance — What Changed

What	Old (1.x)	New (2.x)
Mission import	<code>from pyspedas import wind</code>	<code>from pyspedas.projects import wind</code>
Mission call	<code>pyspedas.wind.mfi(...)</code>	<code>pyspedas.projects.wind.mfi(...)</code>
<code>get_data</code> import	<code>from pytplot import get_data</code>	<code>from pyspedas import get_data</code>
<code>tplot_names</code> import	<code>from pytplot import tplot_names</code>	<code>from pyspedas import tplot_names</code>
<code>tplot</code> import	<code>from pytplot import tplot</code>	<code>from pyspedas import tplot</code>

# STEP-BY-STEP: How to Fix Your Old Scripts

## STEP 1 — Open Your Script in a Text Editor

Navigate to the folder where your script is saved, then open it using nano (a simple terminal text editor):

```
# Go to your folder
cd /path/to/your/folder

# Open your script
nano your_script.py
```

**Nano tip:** Use **Ctrl+W** to search for text inside nano. When done editing, press **Ctrl+O** then **Enter** to save, then **Ctrl+X** to exit.

## STEP 2 — Fix the Mission Import Line

Look near the top of your script for any line that imports a mission name directly from pyspedas. Change it as shown below:

FIND (old line)	REPLACE WITH (new line)
<code>from pyspedas import wind</code>	<code>from pyspedas.projects import wind</code>
<code>from pyspedas import themis</code>	<code>from pyspedas.projects import themis</code>
<code>from pyspedas import mms</code>	<code>from pyspedas.projects import mms</code>
<code>from pyspedas import ace</code>	<code>from pyspedas.projects import ace</code>
<code>from pyspedas import cluster</code>	<code>from pyspedas.projects import cluster</code>
<code>from pyspedas import stereo</code>	<code>from pyspedas.projects import stereo</code>
<code>from pyspedas import psp</code>	<code>from pyspedas.projects import psp</code>
<code>from pyspedas import solo</code>	<code>from pyspedas.projects import solo</code>
<code>from pyspedas import dscovr</code>	<code>from pyspedas.projects import dscovr</code>
<code>from pyspedas import goes</code>	<code>from pyspedas.projects import goes</code>
<code>from pyspedas import omni</code>	<code>from pyspedas.projects import omni</code>
<code>from pyspedas import geotail</code>	<code>from pyspedas.projects import geotail</code>
<code>from pyspedas import ulysses</code>	<code>from pyspedas.projects import ulysses</code>
<code>from pyspedas import erg</code>	<code>from pyspedas.projects import erg</code>

**Simple Rule:** Just add `.projects` after `pyspedas` in every mission import line.

## STEP 3 — Fix the Mission Function Calls

Search your script for any line that calls a mission function like `pyspedas.wind.mfi(...)` or `pyspedas.themis.fgm(...)`. Add `.projects` after `pyspedas` in those lines too:

FIND (old)	REPLACE WITH (new)
<code>pyspedas.wind.mfi(...)</code>	<code>pyspedas.projects.wind.mfi(...)</code>
<code>pyspedas.wind.swe(...)</code>	<code>pyspedas.projects.wind.swe(...)</code>
<code>pyspedas.themis.fgm(...)</code>	<code>pyspedas.projects.themis.fgm(...)</code>
<code>pyspedas.mms.fgm(...)</code>	<code>pyspedas.projects.mms.fgm(...)</code>
<code>pyspedas.ace.mfi(...)</code>	<code>pyspedas.projects.ace.mfi(...)</code>

## STEP-BY-STEP: How to Fix Your Old Scripts (Continued)

### STEP 4 — Fix the get\_data / tplot Imports (MOST IMPORTANT)

This is the most common cause of errors! In PySPEDAS 2.x, the data is stored inside pyspedas itself. If you import get\_data from pyplot, it looks in the wrong place and finds nothing — causing crashes.

Find and replace ALL of these lines:

FIND (old)	REPLACE WITH (new)
<code>from pyplot import get_data</code>	<code>from pyspedas import get_data</code>
<code>from pyplot import tplot_names</code>	<code>from pyspedas import tplot_names</code>
<code>from pyplot import tplot</code>	<code>from pyspedas import tplot</code>
<code>from pyplot import store_data</code>	<code>from pyspedas import store_data</code>
<code>from pyplot import options</code>	<code>from pyspedas import options</code>
<code>from pyplot import xlim</code>	<code>from pyspedas import xlim</code>
<code>from pyplot import ylim</code>	<code>from pyspedas import ylim</code>
<code>from pyplot import cdf_to_tplot</code>	<code>from pyspedas import cdf_to_tplot</code>

**Simple Rule:** Anything imported from pyplot → change to from pyspedas.

### STEP 5 — Save and Run Your Script

After making all the changes in nano:

1	Press Ctrl + O then Enter to save the file
2	Press Ctrl + X to close nano and return to terminal
3	Make sure your virtual environment is active (you should see (pyspedas_env) in your prompt)
4	Run your script:

```
# Activate environment (do this every time you open a new terminal)
source ~/pyspedas_env/bin/activate

# Run your script
python3 your_script.py
```

## Standard Script Template for PySPEDAS 2.x

Copy this block at the top of every new script you write. Replace 'wind' with your mission name (themis, mms, ace, etc.):

```
import numpy as np
import matplotlib.pyplot as plt
import warnings
warnings.filterwarnings('ignore')

# PySPEDAS 2.x - correct imports

import pyspedas

from pyspedas.projects import wind # change mission name

from pyspedas import get_data, tplot_names, tplot
```

## Pre-Run Checklist — Before Running Any Old Script

Every time you are about to run an old script, quickly check these 5 things:

[ ] 1	Virtual environment is active — you see (pyspedas_env) in your terminal prompt
[ ] 2	Mission import uses from pyspedas.projects import
[ ] 3	Mission calls use pyspedas.projects..(...)
[ ] 4	get_data is imported from pyspedas (NOT from pyplot)
[ ] 5	All other pyplot imports (tplot, tplot_names, etc.) changed to from pyspedas

## Common Errors and Their Fixes

Error Message	Cause	Fix
<code>ImportError: cannot import name 'wind' from 'pyspedas'</code>	Old mission import	Change to: <code>from pyspedas.projects import wind</code>
<code>TypeError: 'NoneType' object is not subscriptable</code>	get_data imported from pyplot — returns None	Change to: <code>from pyspedas import get_data</code>
<code>The name BGSE is currently not in pyplot</code>	Same root cause — wrong get_data source	Change to: <code>from pyspedas import get_data</code>

<b>ModuleNotFoundError:</b> No module named 'pytplot'	<b>pytplot-mpl-temp</b> not installed	<b>Run:</b> pip install pytplot-mpl-temp
<b>FigureCanvasAgg is</b> <b>non-interactive</b>	Terminal mode — not an error	<b>Plot is saved as .png file – open</b> <b>with: xdg-open plot.png</b>

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*PySPEDAS 2.x Migration Guide | For Linux (Ubuntu) | Python 3.10+ | PySPEDAS 2.1.0*