ctools - Support #3131

Possible cause of error

01/09/2020 12:58 PM - Acharyya Atreya

Status:	New	**Start date:**	01/09/2020
Priority:	Normal	**Due date:**	
Assigned To:	Knödlseder Jürgen	**% Done:**	50%
Category:		**Estimated time:**	0.00 hour
Target version:			

Description

I am running some ctools simulations for the CTA exgal working group. We are computing the pre-trial significance of 1550 AGN using ctools. When doing 50 hour simulations in the energy range 1-300 TeV I am encountering the following error

+++ WARNING in GCTABackground3D::mc(GEnergy&, GTime&, GRan&): Background rate 6.9329386163784e-08 for 196.515956506239 TeV at DETXY=[0.167020996035742,-0.113500638104345] is larger than the maximum expected rate 2.06984562822754e-08. Something is wrong with the code.

Code seems to be working for other analysis (have attached it here). Am worried about what it means.
Thanks in advance.

History

#1 - 01/09/2020 01:42 PM - Tibaldo Luigi

Hi Atreya,
could you please tell me:

- which is the version of ctools you are using
- for which IRFs you obtain this error message
- what is the minimum energy (1 TeV)

#2 - 01/09/2020 02:03 PM - Acharyya Atreya

user#266 wrote:

> Hi Atreya,
> could you please tell me:
>
> - which is the version of ctools you are using
> - for which IRFs you obtain this error message
> - what is the minimum energy (1 TeV)

Hi Luigi,

Am using :
Ctools version 1.6.3
The errors only occur for north sources having a declination >40
IRF prod 3b-v2 'South_z60_50h' and 'North_z60_50h' depending on declination

The minimum energy for this instance is 1 TeV upto a maximum of 199 TeV

Thanks

#3 - 01/09/2020 02:05 PM - Tibaldo Luigi

Could you give me the coordinates of one of the sources for which you get the error please?

#4 - 01/09/2020 02:39 PM - Acharyya Atreya

user#266 wrote:

> Could you give me the coordinates of one of the sources for which you get the error please?

A possible source would be 4FGL_J0209.9+7229 32.4979 72.4877

I see what you mean. This source would not be detectable with CTA-S as below horizon (negative culmination). So it is possible then that this error arises due to that.
I had assumed that ctobssim would automatically handle that exception and give 0/'nan' significance especially because I didn't get same error for 5 hour simulations at all energy thresholds.
Thanks again

#5 - 01/09/2020 03:02 PM - Tibaldo Luigi

No, it's up to you to choose the array you want to run the simulation for. For this specific source you should choose CTA-N.
Can you please confirm whether you get this error for this source when you use a North IRF or if it is only when you use a South one?

#6 - 01/09/2020 05:57 PM - Acharyya Atreya

user#266 wrote:

> No, it's up to you to choose the array you want to run the simulation for. For this specific source you should choose CTA-N.
> Can you please confirm whether you get this error for this source when you use a North IRF or if it is only when you use a South one?

Yes it's only when I run the South Array and a similar error also occurs for really Southern sources with North IRFs. Makes sense

I'll manually alter my script to incorporate objects below horizon. They'd asked us to find pre-trial significances for both North and South arrays so I hadn't done so yet.
Thanks so much and you've been a great help as usual.

#7 - 01/09/2020 06:04 PM - Tibaldo Luigi

- Tracker changed from Bug to Support

- Assigned To set to Tibaldo Luigi

- % Done changed from 0 to 50

You're welcome.

TBD: figure out exactly what triggers this behavior, and, in case, implement a clearer error message.

#8 - 02/20/2020 03:40 PM - Tibaldo Luigi

- Assigned To changed from Tibaldo Luigi to Knödlseder Jürgen

I cannot figure out why dealing with an unreasonable ROI (below the horizon), raises this error. Jürgen, could you please take a look?

Files

pl_simulations_50hr.py	13.8 KB	01/09/2020	Acharyya Atreya