System Modeling

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Objectives

- **Assist instrument design and verify system performance**
- **Design operational modes**
- **Produce simulated data and test data analysis software**

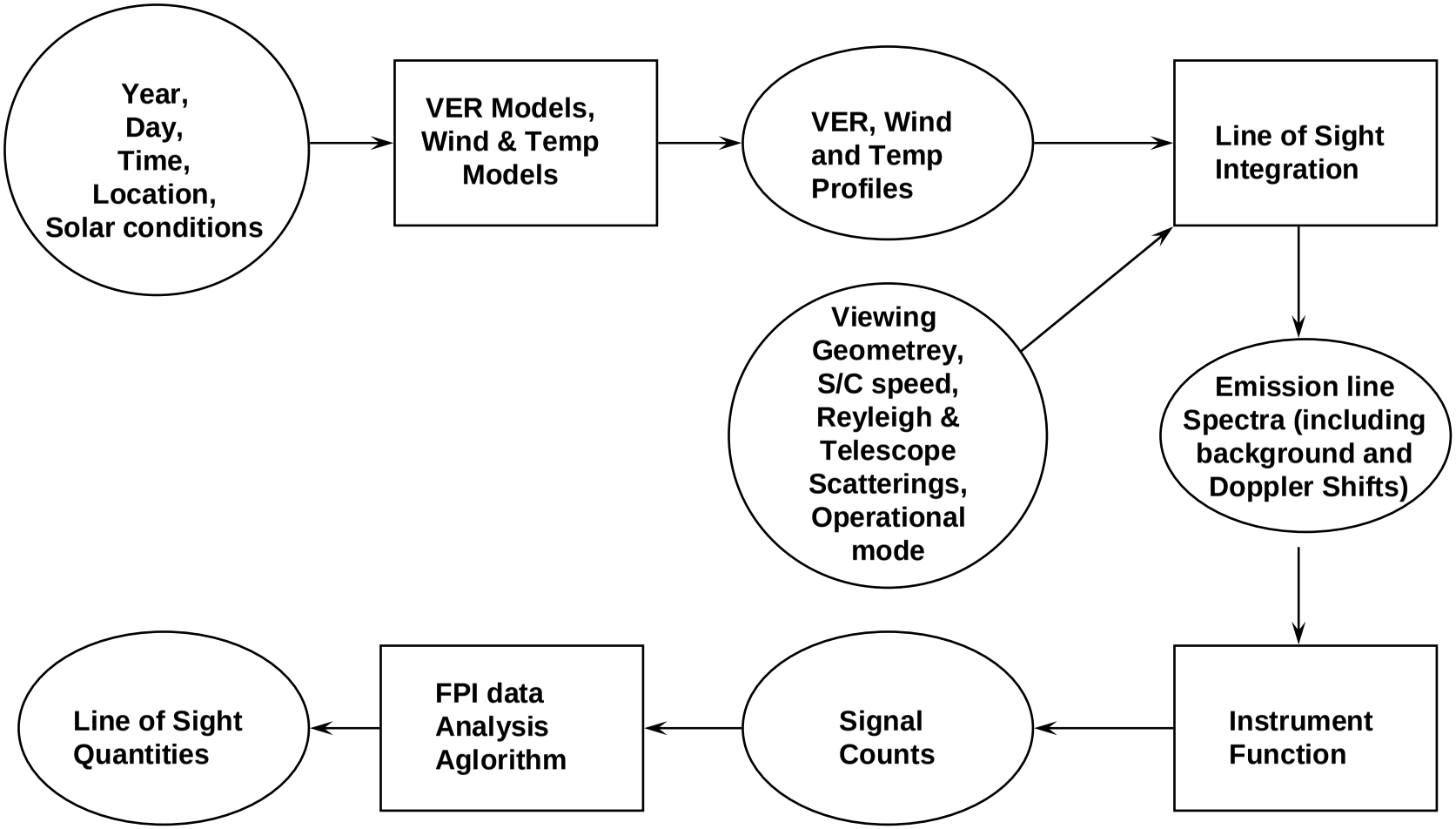
Outlines

- Simulation routines
- Operational Modes
- Rotational Temperature

Simulation Routines

- **Simulation routines**

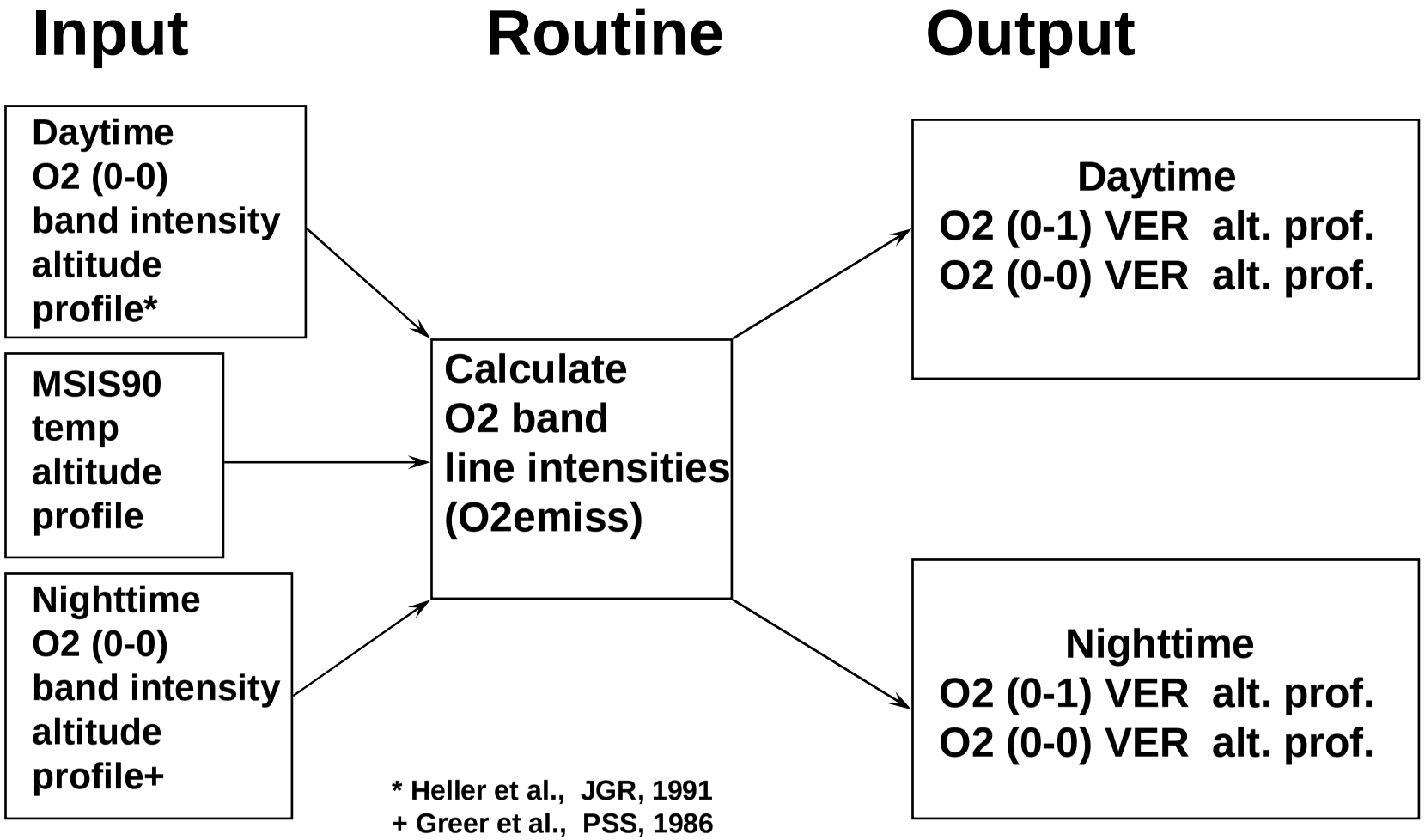
Simulation Model Block Diagram



Airglow and Wind models

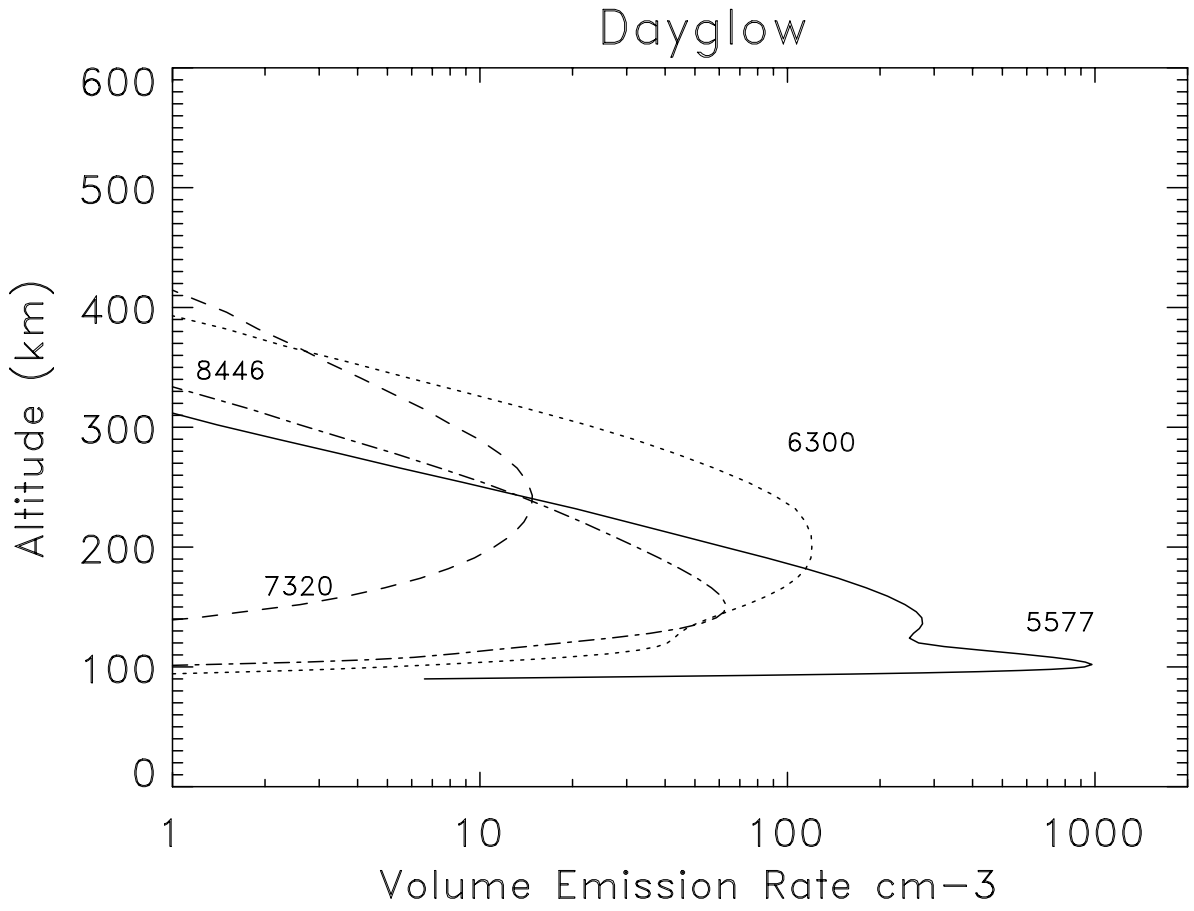
Emission	Time	Models
6300	day & night	Solomon 1993
5577	day	Solomon 1993
8446	day	Solomon 1993
7320	day	Solomon 1993
5577	night	Greer et al. 1986
5893	night	Swider 1986
Temp		MSIS90
Wind		HWM93

O2 Airglow Emission Calculations

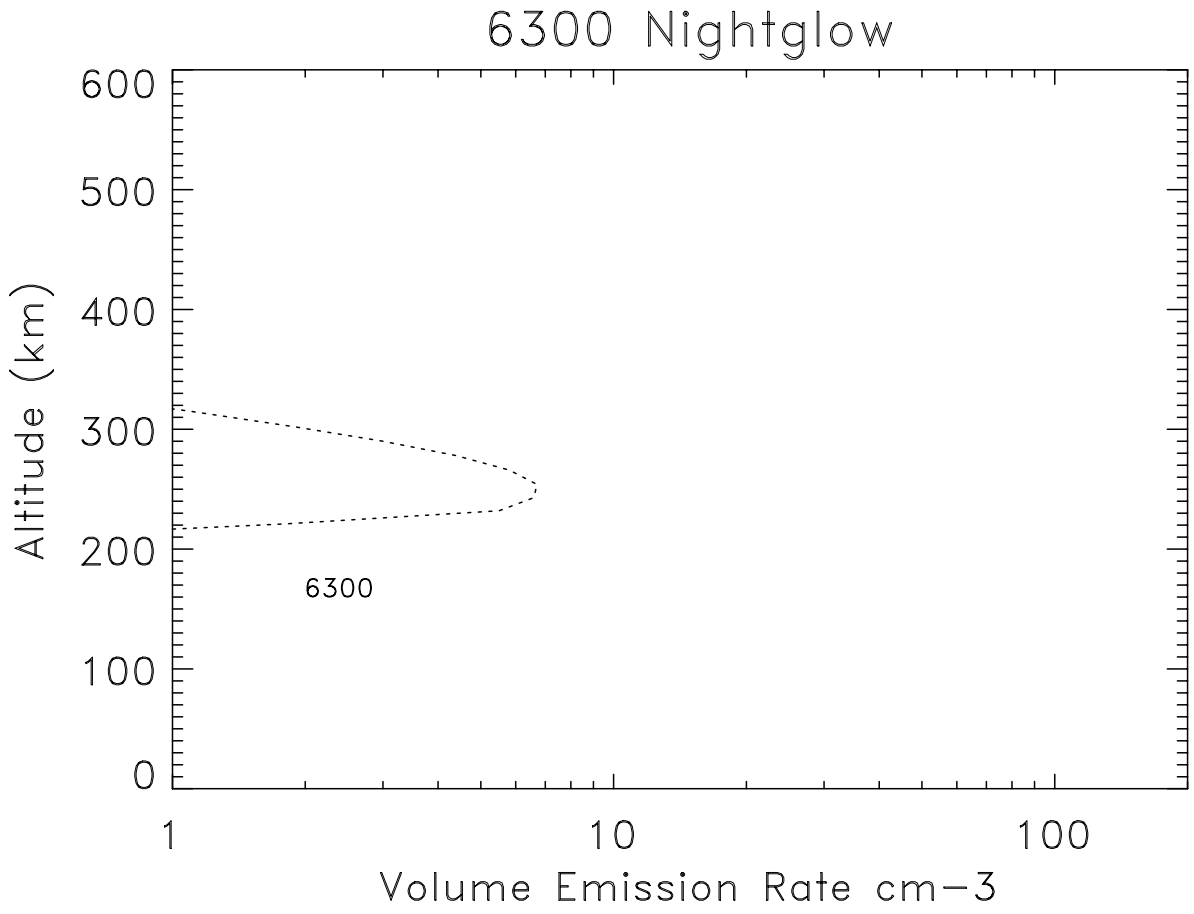


* Heller et al., JGR, 1991
\+ Greer et al., PSS, 1986

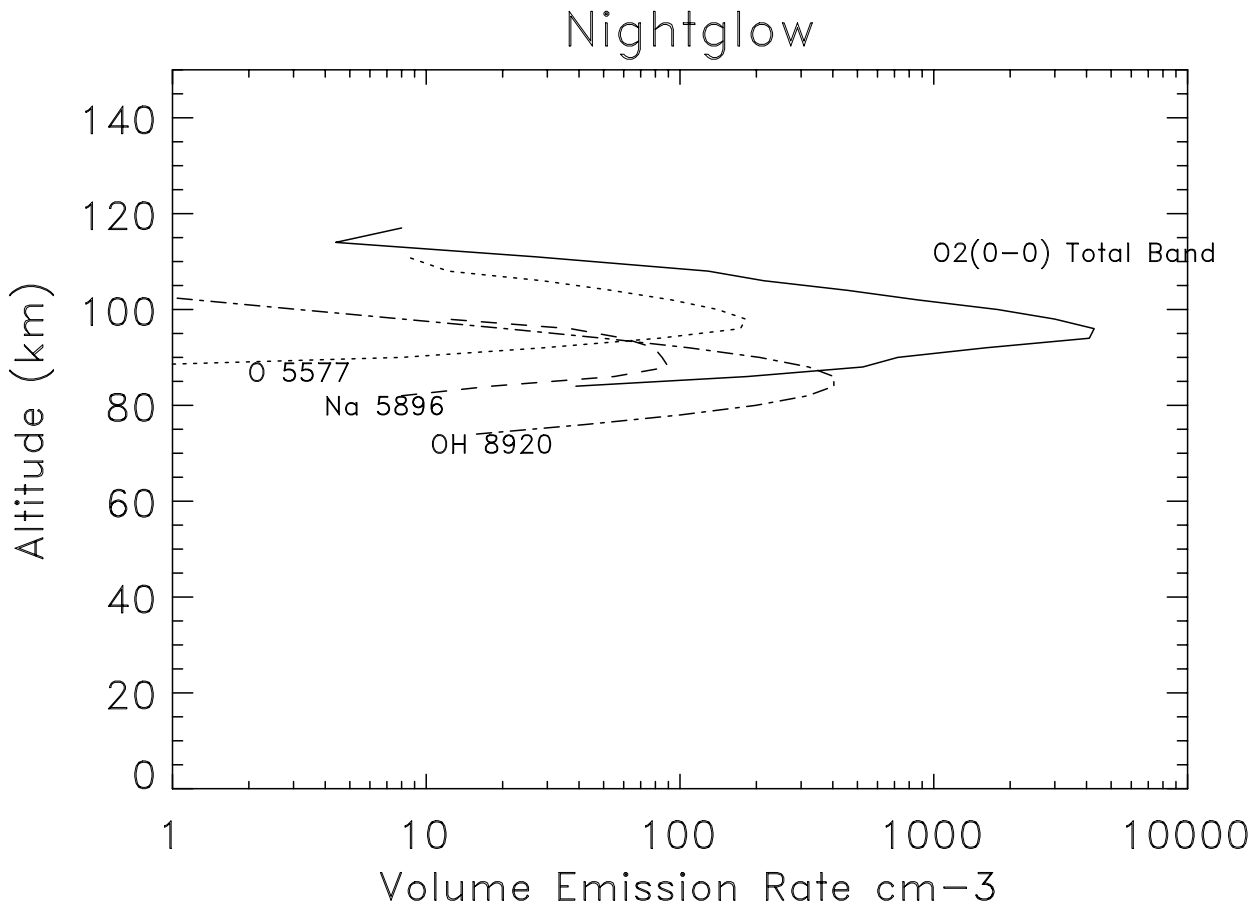
TIDI Dayglow Volume Emission Rates



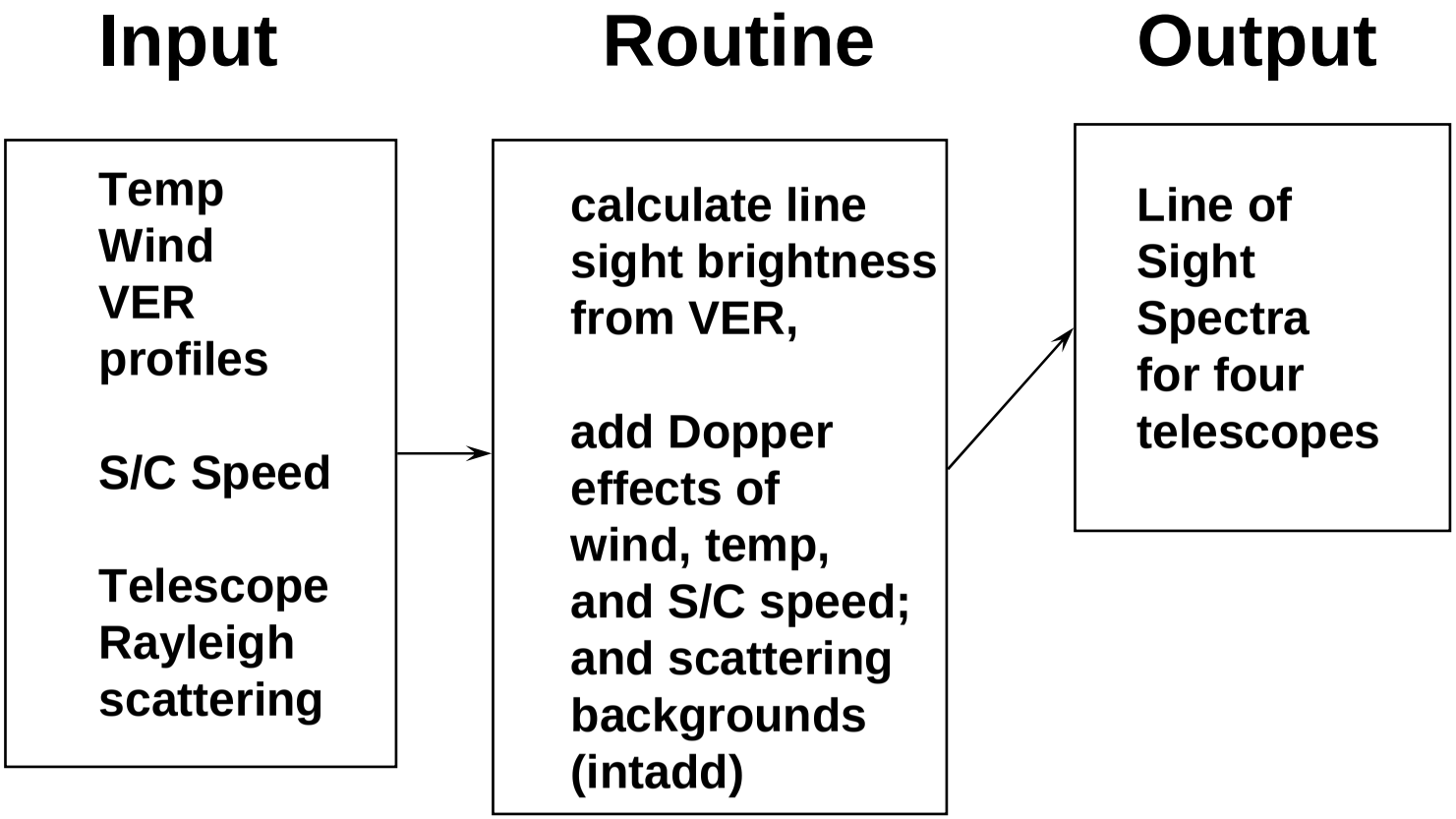
6300 Nightglow Emission Rate



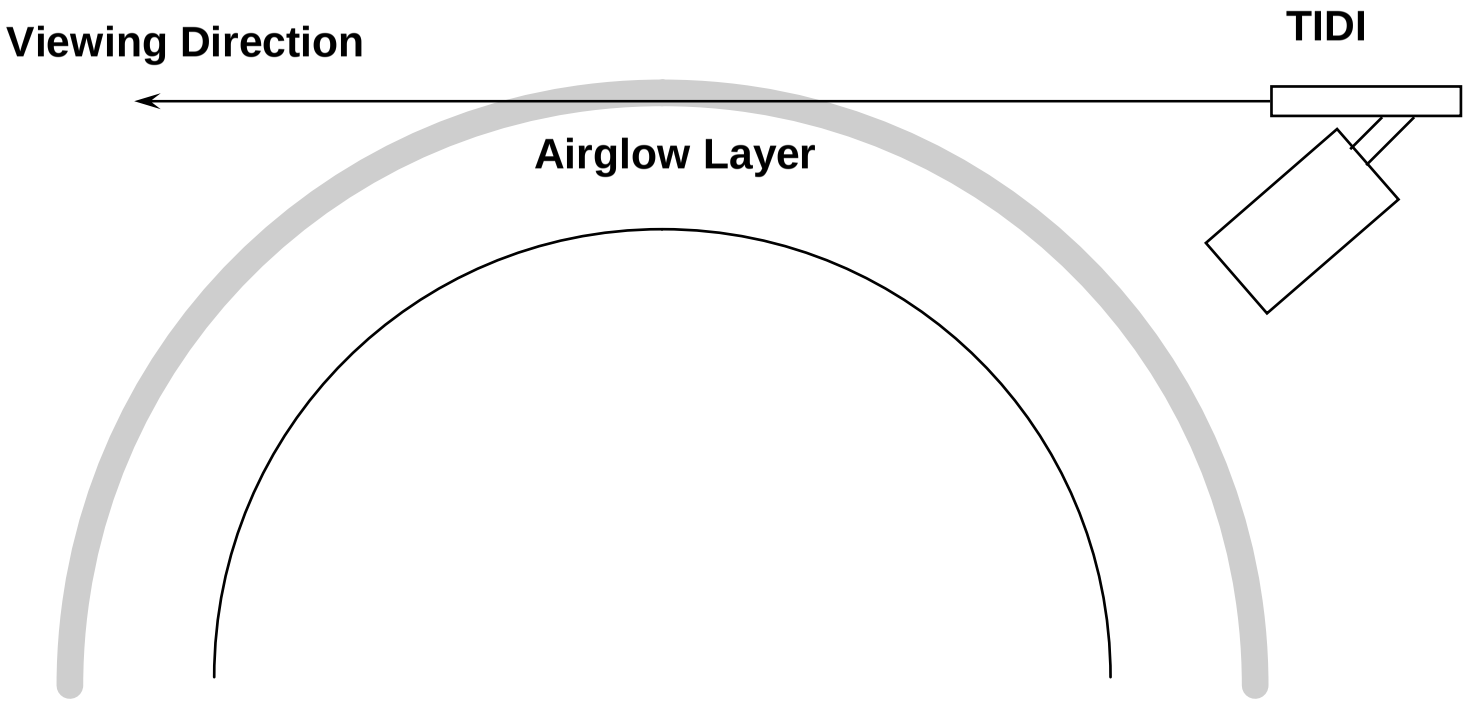
TIDI Nightglow Volume Emission Rates



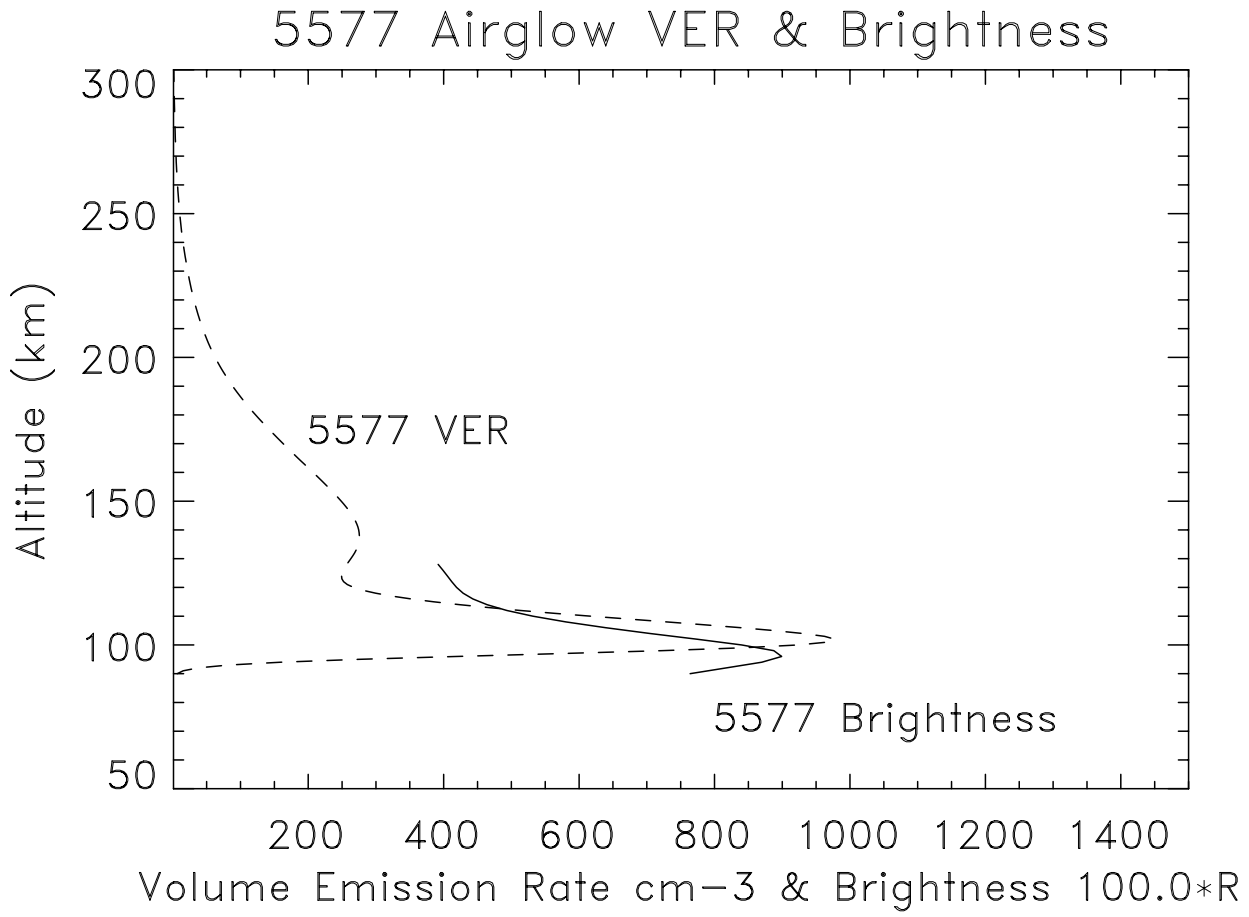
TIDI Line of Sight Integration Routine



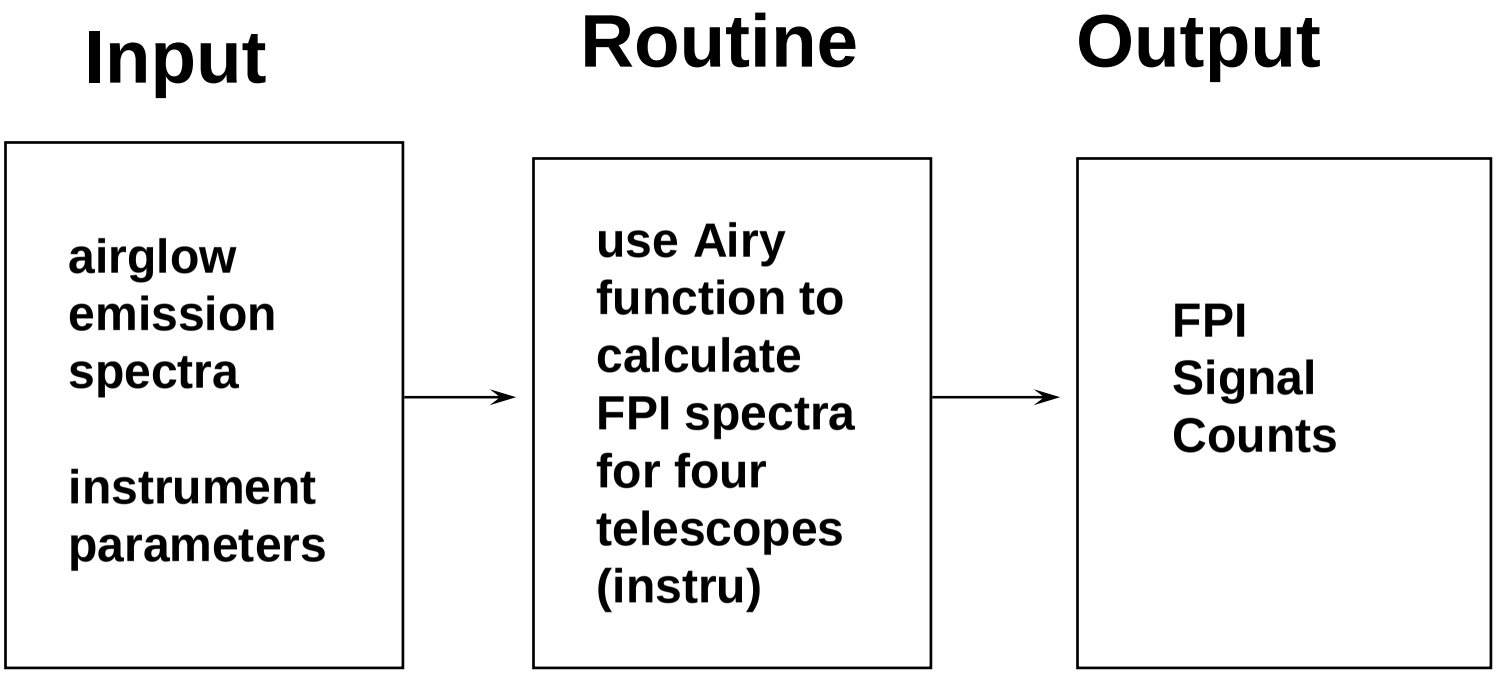
Line of Sight Geometry



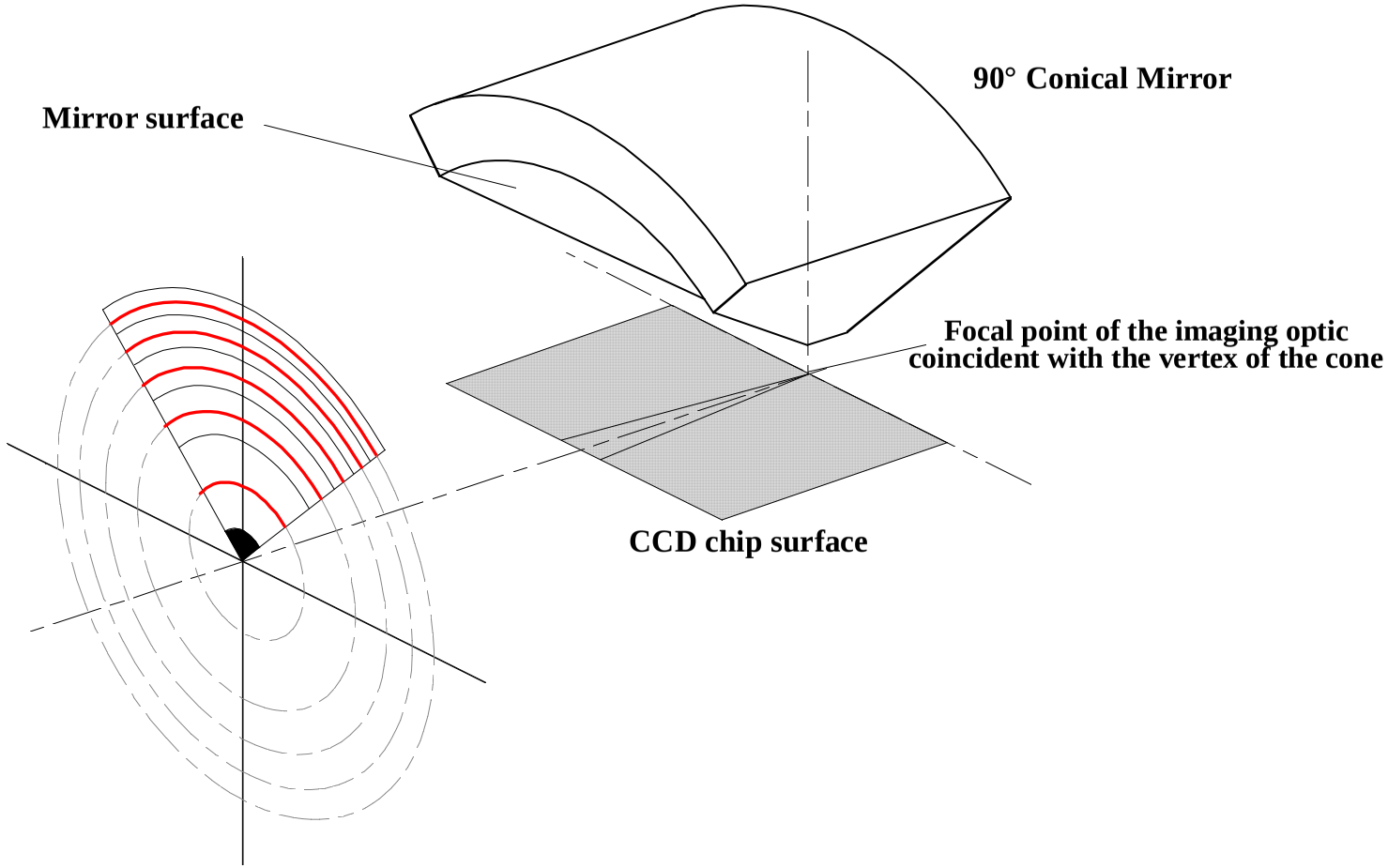
TIDI Line of Sight Integration Example



Instrument Function



CLIO Configuration



CCD Binning Pattern

Fields	1	2	3	4	5
	11	4	3	3	3
	10	4	3	3	2
	9	4	3	3	2
	9	4	3	3	2
	8	4	3	3	2
	8	4	3	3	2
	8	4	3	3	2
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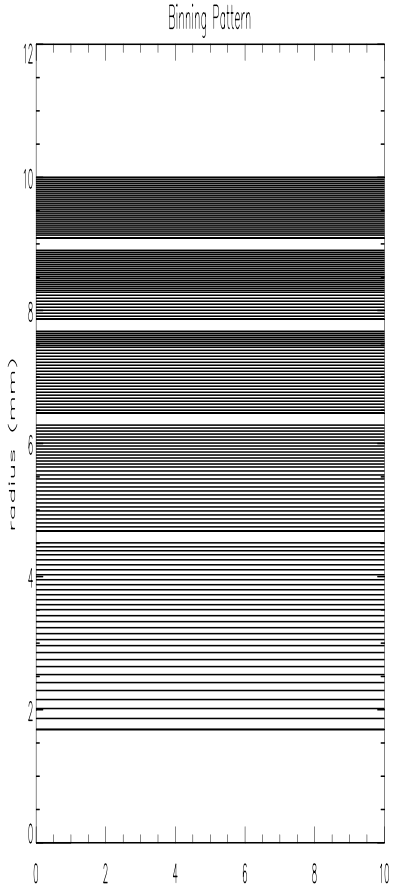
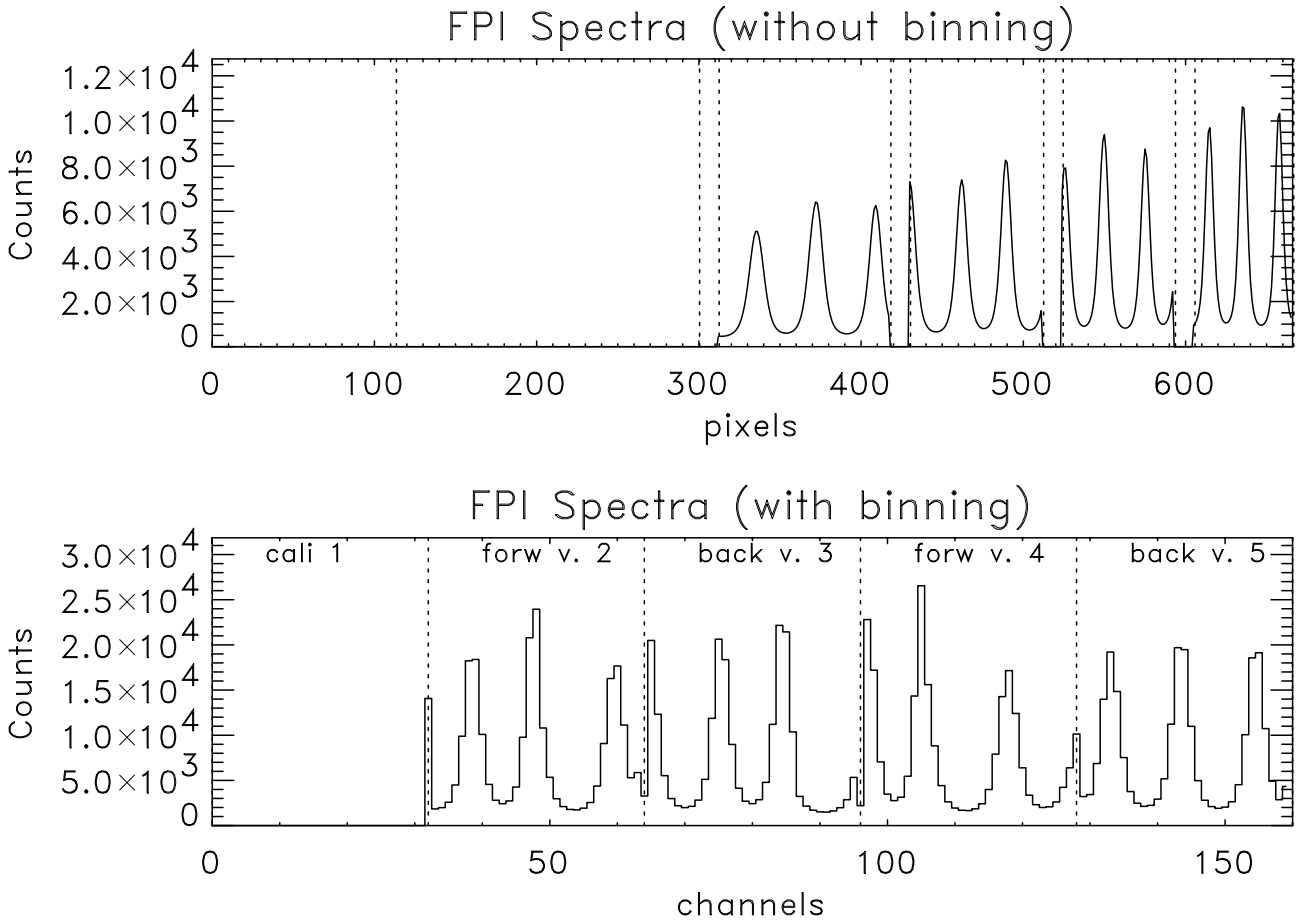
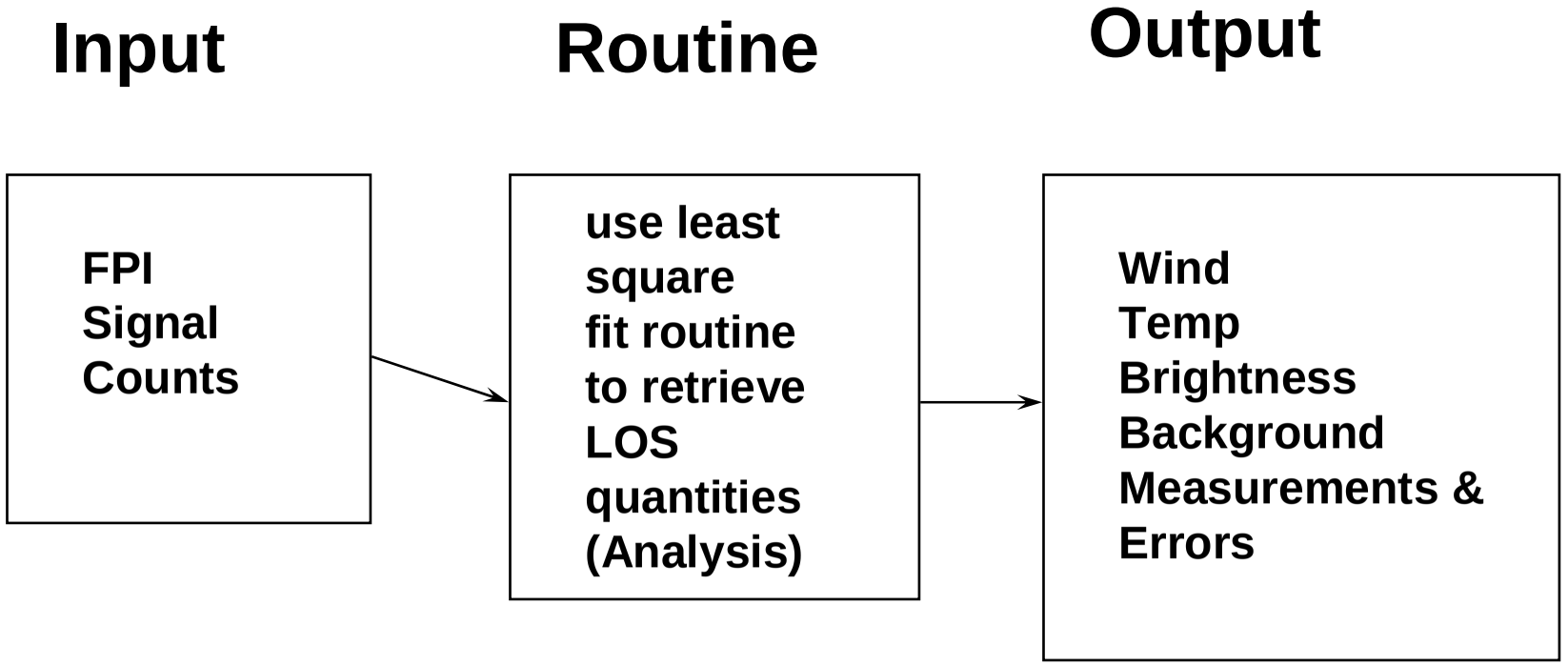
	5	3	2	2	2
	5	3	2	2	2
	4	3	2	2	2
	4	3	2	2	2
	4	3	2	2	2
Total	187	106	82	69	61



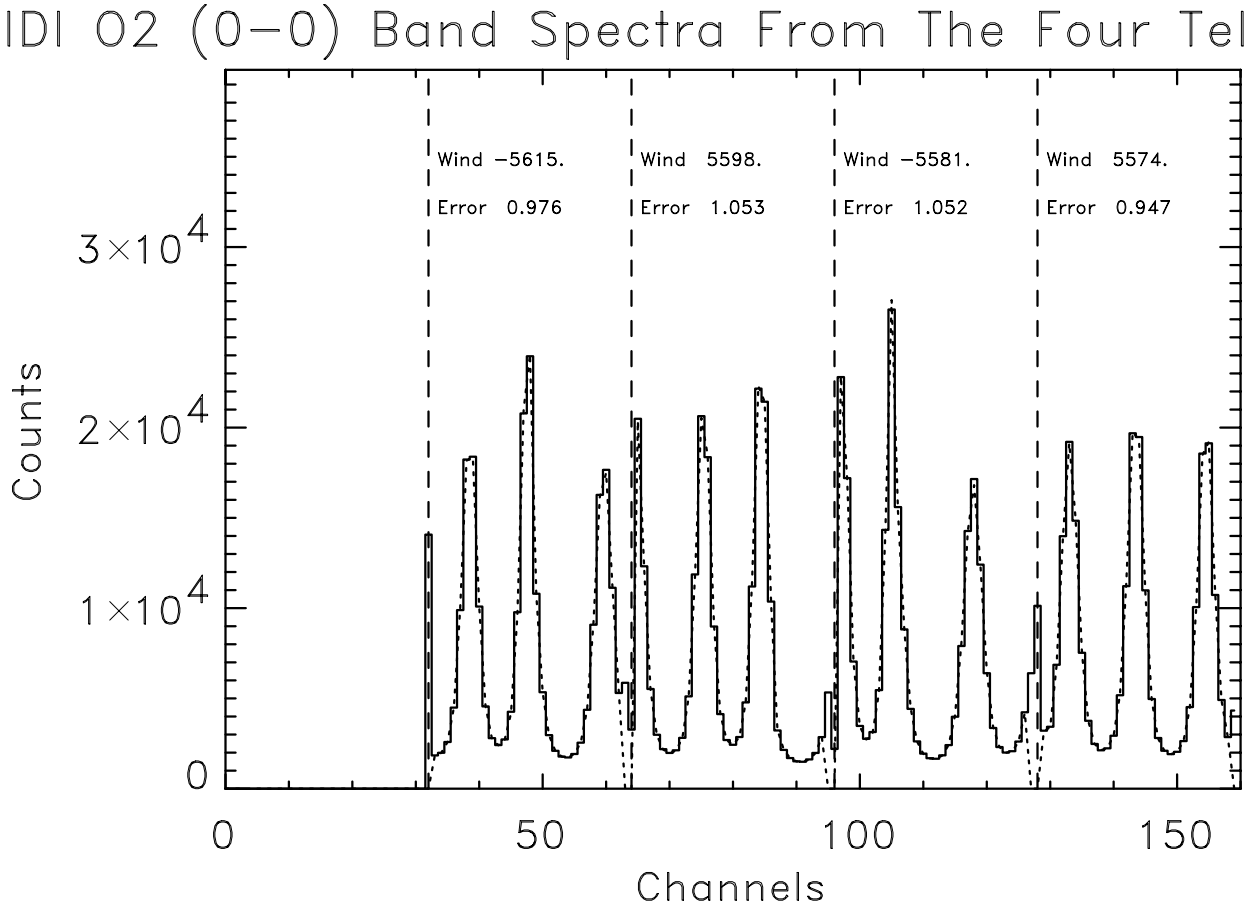
CCD Pixel Binning



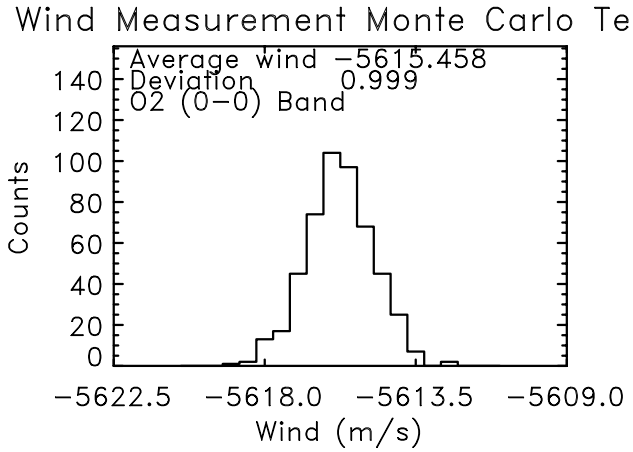
FPI Data Analysis Routine

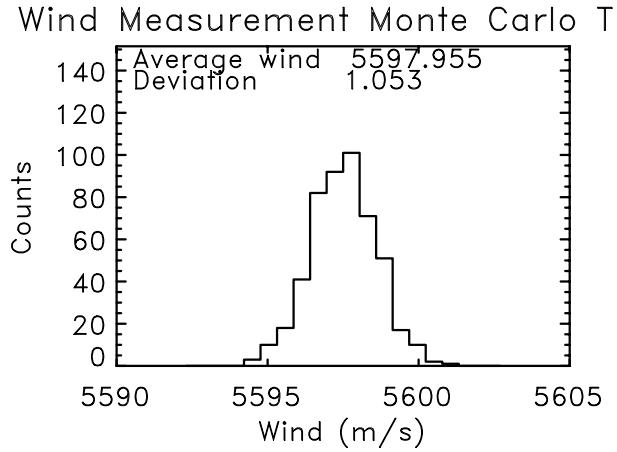


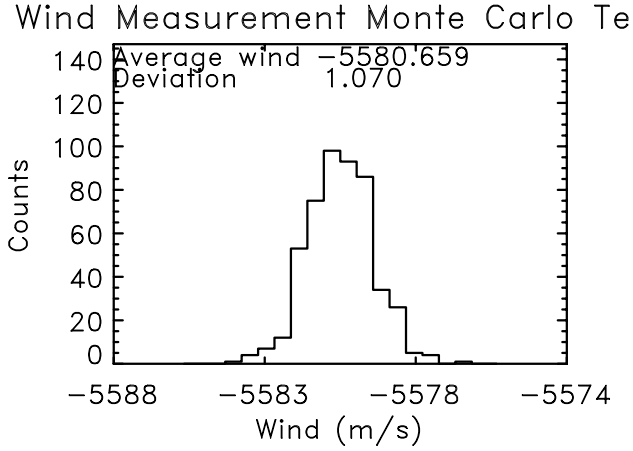
TIDI FPI Wind Measurements and Errors

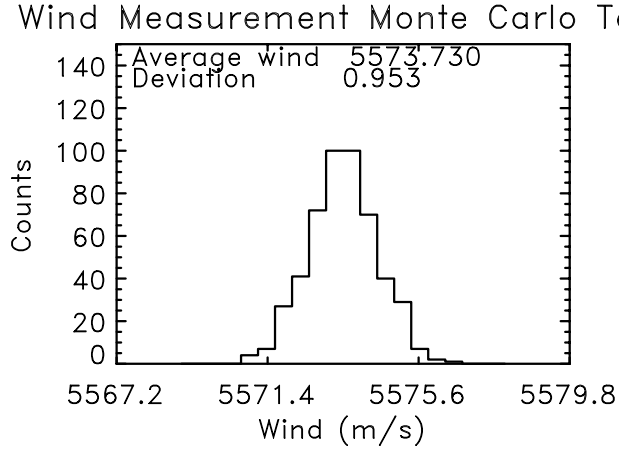


Monte Carlo Test of FPI Analysis





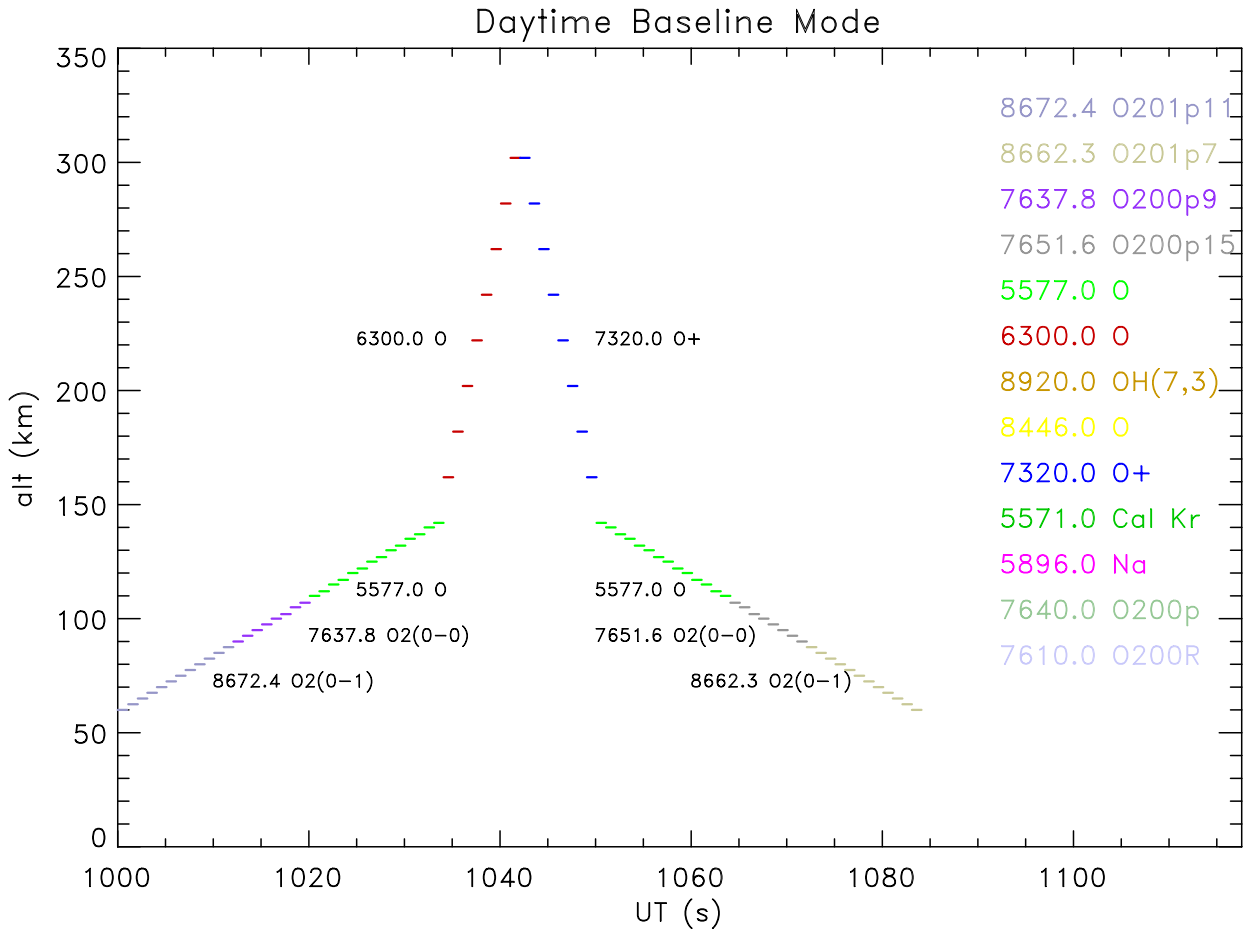




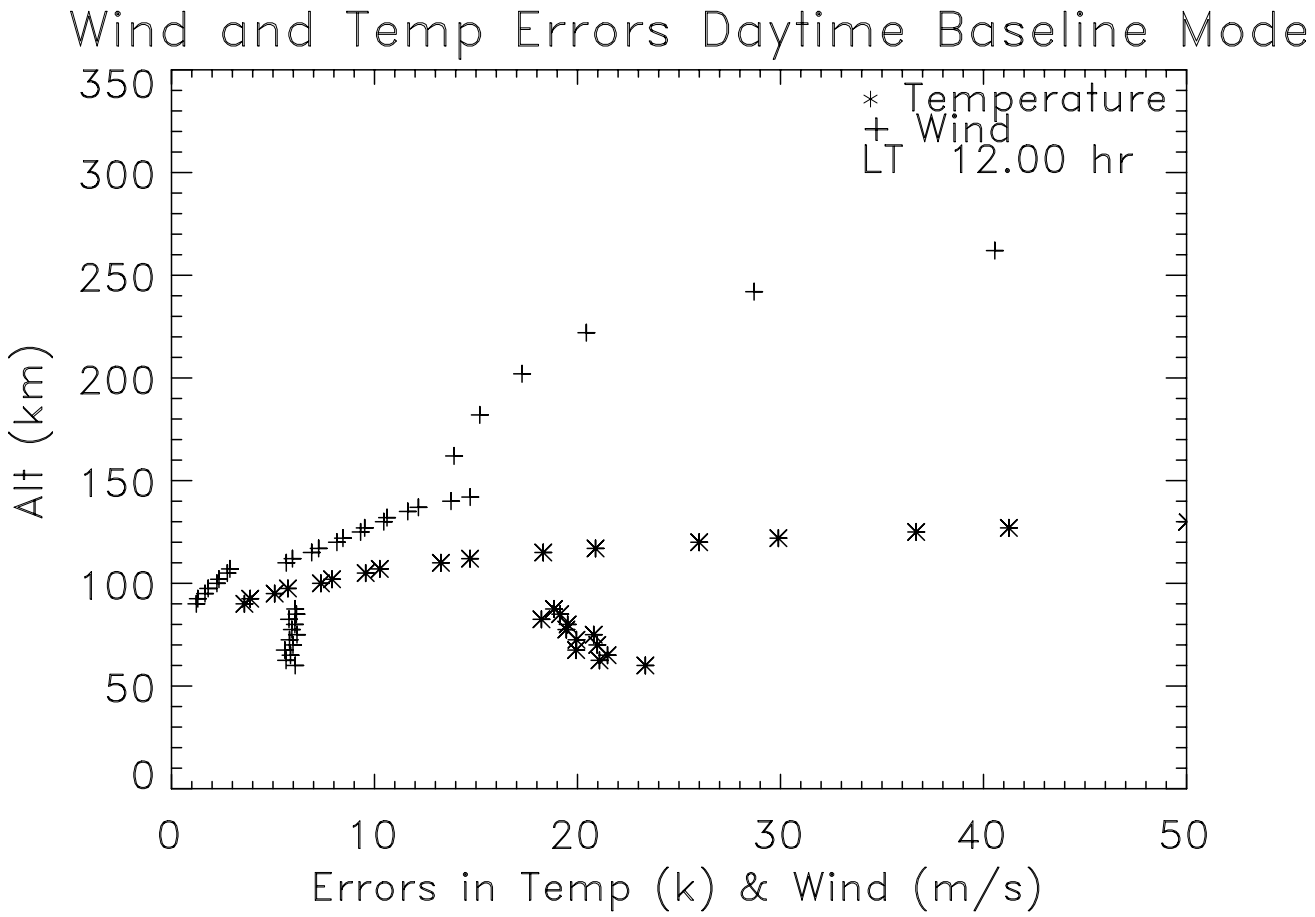
Operational Modes

- **Operational Modes**

TIDI Daytime Baseline Operational Mode



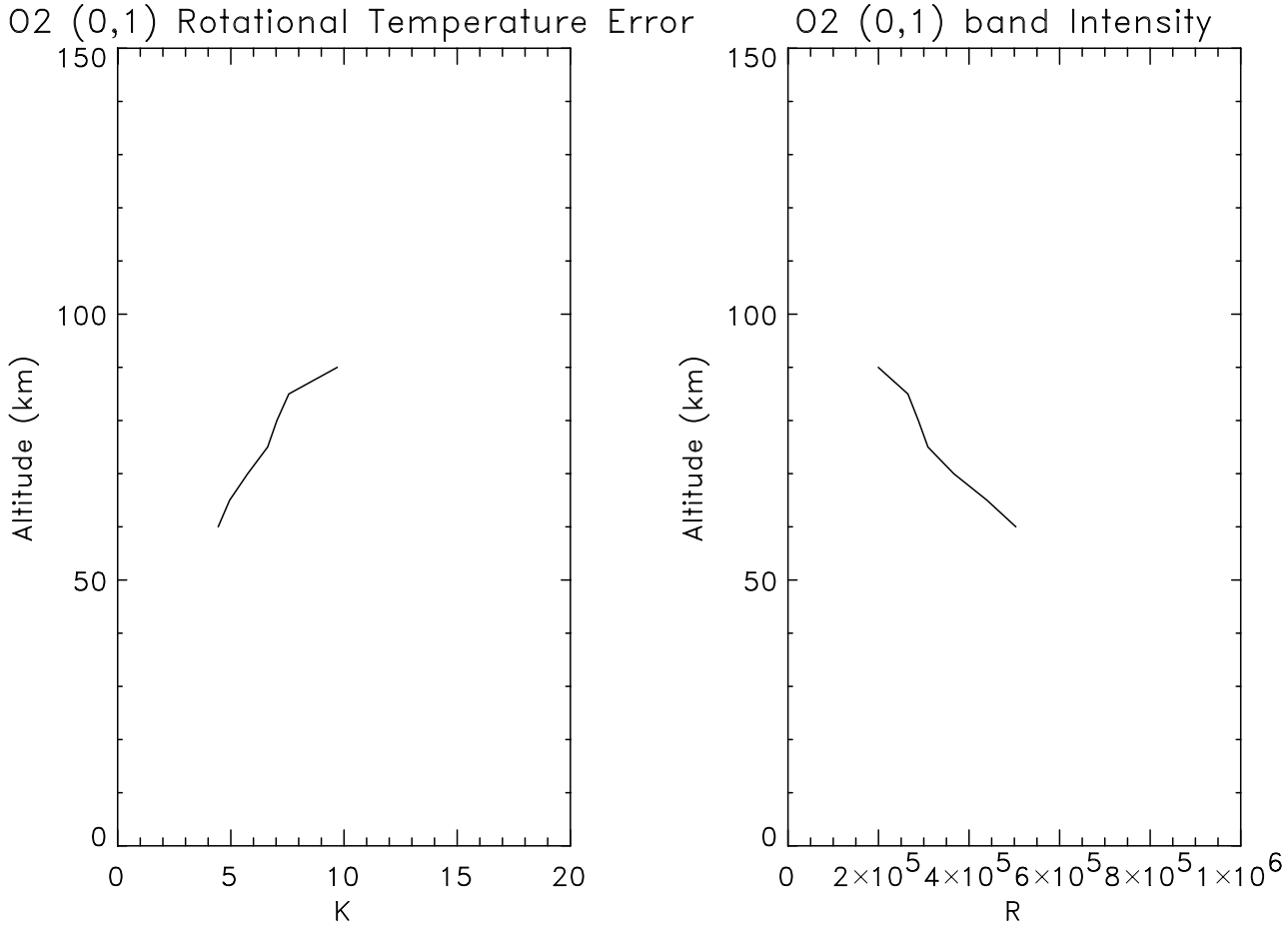
Baseline Mode Errors



Rotational Temp Measurements

- **Rotational Temperature Measurements**

O2 (0-1) Rotational Temp Errors



O2 (0-0) Rotational Temp Errors