What should we do next with *TESS*?

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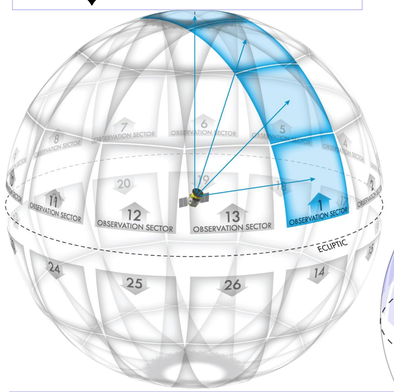
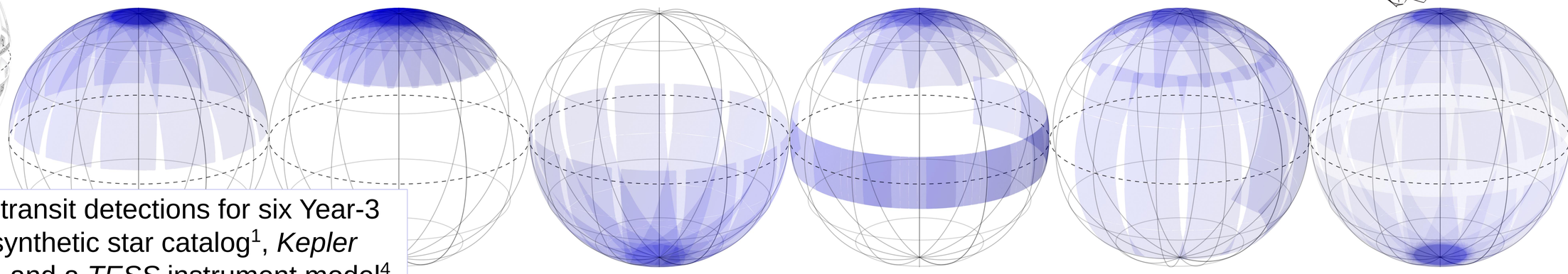
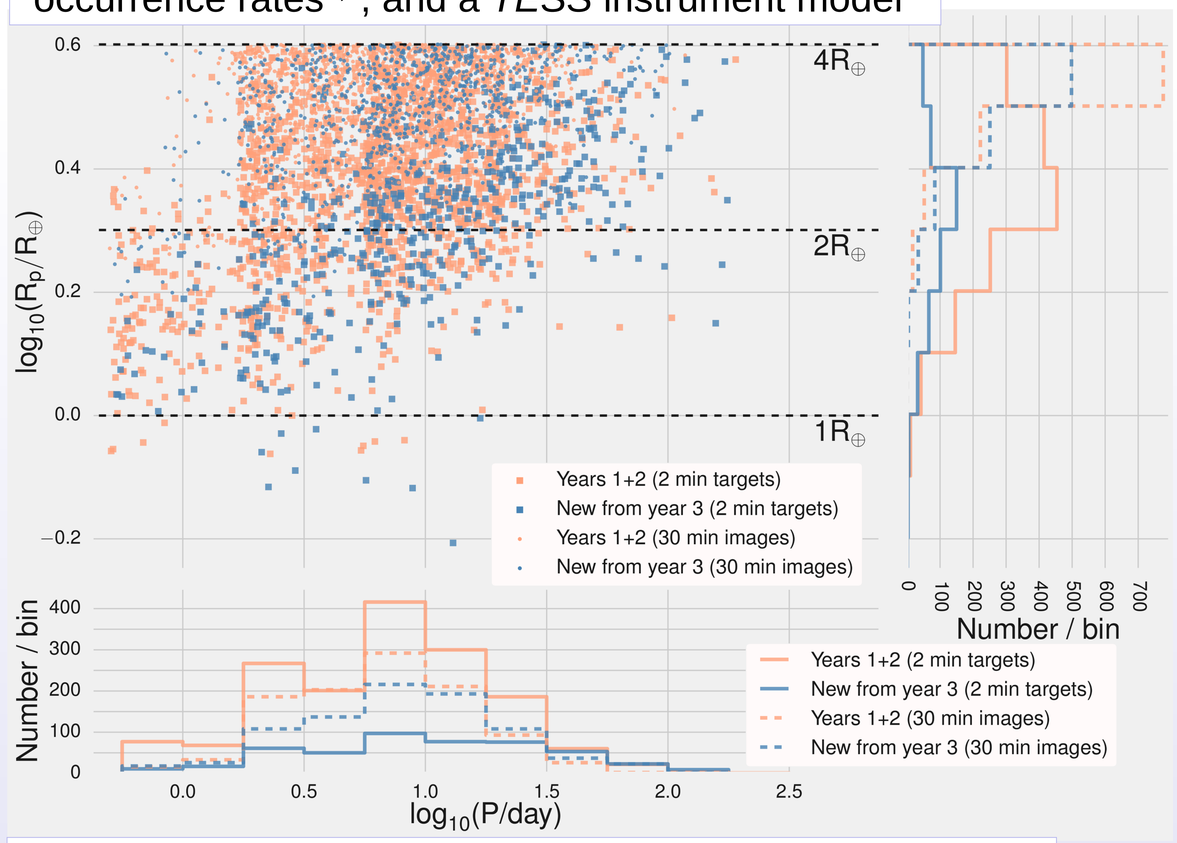
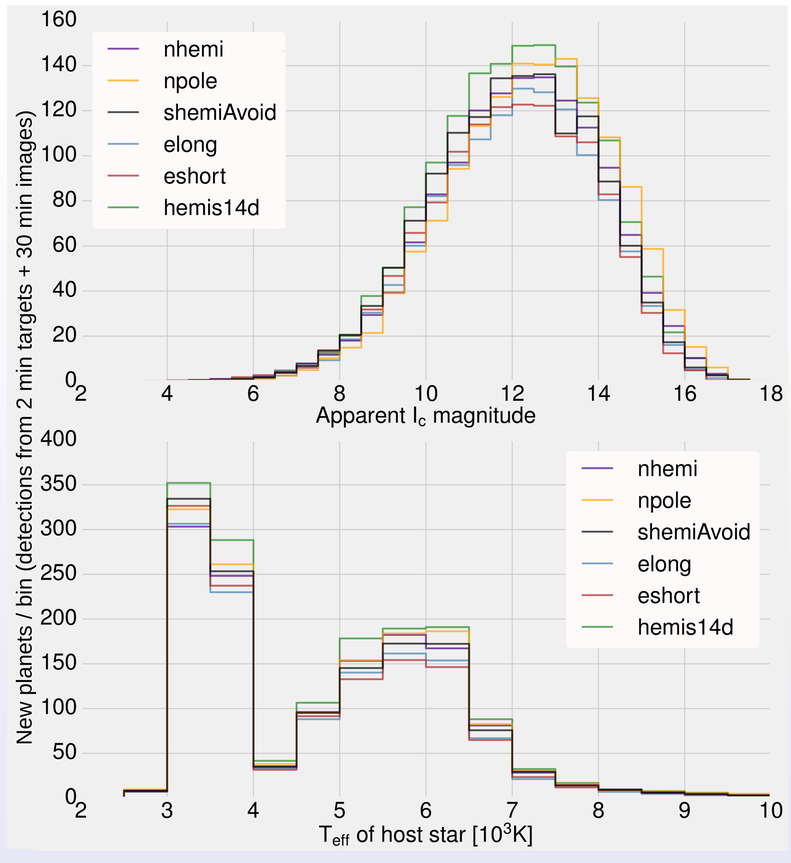
0 ↓: Years 1 & 2





1 →: We simulate transit detections for six Year-3 options using a synthetic star catalog[1], *Kepler* occurrence rates[2,3], and a *TESS* instrument model[4]





2 ↑: Example planet population detected in years 1, 2 & 3: extended missions give smaller planets at longer periods

← **3:** New planet detections vary by $\lesssim$ factor of 2

(see figure and SI tables)

4: We will need to make trade-offs!

- New planet detections?
- Improving ephemerides of known planets?
- Ease of ground (photometry, RV) & space-based (*JWST*; *CHEOPS*) follow-up?
- Observing *Kepler* / *K2* / *CoRoT* targets (TTVs; single-transits)?
- Non-exoplanet science (SNe, asteroseismology, EBs, main-belt asteroids)?

SI 1 ↙: Yield from 2×10^5 target stars (2 min cadence)

SI 2 ↓: Yield from 30 min cadence full frame images

No Earth/Moon; R<4R⊕	nhemi	npole	shemiAvoid	elong	eshort	hemis14d	**<primary>**	nhemi	npole	shemiAvoid	elong	eshort	hemis14d	**<primary>**
Unique planets	2124	2310	2113	2187	2188	2207	**1614**	1934	1791	1952	1741	1752	1984	**1064**
New planets	497	616	479	549	467	596	**1614**	877	803	898	715	791	923	**1064**
New planets, P>20d	144	154	127	128	118	191	**213**	132	124	127	102	117	145	**92**
Systems w/ new planets	67	54	61	41	57	90		11	7	10	5	8	13	
“Good” for atmospheres	76	70	96	107	104	102	**427**	141	80	183	135	161	175	**341**
New planets from new stars	0	15	59	188	69	0		0	35	76	184	40	0	
New planets from SNR/transits	497	602	420	361	398	596		876	768	823	531	752	923	

?’s and comments:

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